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WATER SUPPLY OUTLOOK FOR MONTANA

Prepared by
U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE
Collaborating with
MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF
MAY 1, 1972

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters of key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO NUMBER ORC 221-3

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR MONTANA

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

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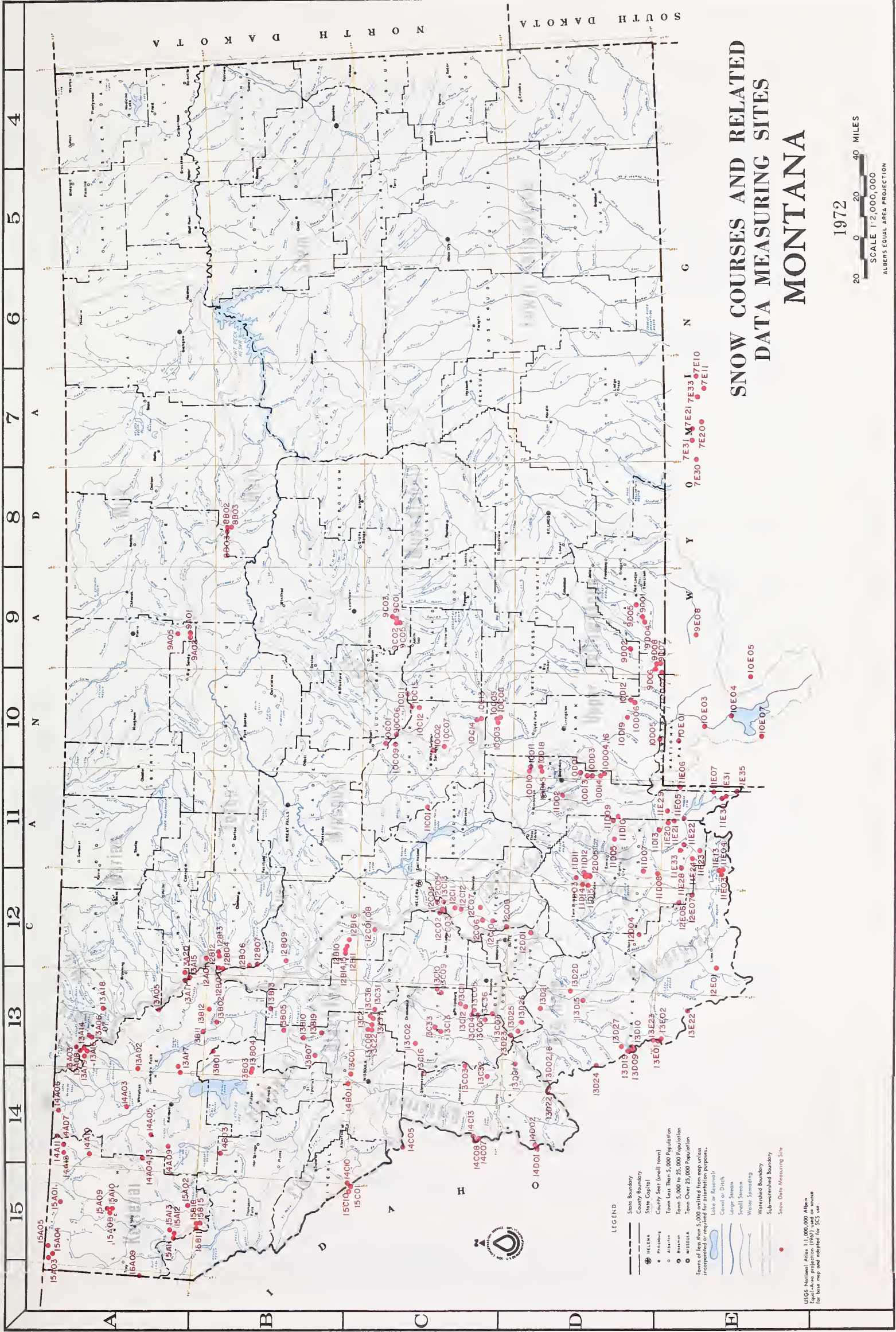
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SNOW COURSES AND RELATED DATA MEASURING SITES MONTANA

1972

20 0 20 40 MILES

SCALE 1:2,000,000

ALBERTS EQUAL AREA PROJECTION

- LEGEND**
- State Boundary
 - County Boundary
 - State Capital
 - County Seat (small town)
 - Population
 - Town Less Than 5,000 Population
 - Town 5,000 to 25,000 Population
 - Town Over 25,000 Population
 - Towns of less than 5,000 omitted from map unless incorporated or required for orientation purposes.
 - Lake or Reservoir
 - Canal or Ditch
 - Large Stream
 - Small Stream
 - Water Spreading
 - Watershed Boundary
 - Sub-watershed Boundary
 - Snow Data Measuring Site

USGS National Atlas 1:1,000,000. Albert
Equal-Area projection (1967) used as source
for town map. Map compiled by USGS.

MONTANA WATER SUPPLY OUTLOOK
May 1, 1972

* * * * *

* There was little change in the Montana snowpack
* pattern during April. Melting at lower elevations
* was about normal. Water stored in the higher
* elevation snowpack increased. Areas along the
* eastern slope of the Continental Divide and all
* areas west of the divide continue to have the
* largest snowpack on record. The Gallatin River
* drainage continues to have a near average snowpack.
*
* Streamflow volumes for the snowmelt period are
* forecast to be near or above previous record
* amounts on all streams west of the divide and on
* some areas having headwaters in the heavy snowpack
* areas east of the divide. Other streams are ex-
* pected to produce above average runoff.
*
* * * * *

COLUMBIA RIVER DRAINAGE

Snow - Nearly all higher elevation snow courses continue to show new record amounts of water stored in the snowpack. Melting of the snowpack during April was about average. The water presently stored in the mountain watersheds as snow varies from 150 to 170 percent average.

Special May 15 surveys are scheduled to evaluate snowmelt progress.

Streamflow - Record or near record volume runoff is forecast for all streams. Nearly all May through September forecasts are in the 130 to 160 percent average range. Runoff during April was generally near or above average. Peak flows are expected to be 20 to 30 percent above average under ideal melting conditions of moderate temperatures and minimum precipitation. Periods of above average temperatures and significant precipitation during the main snowmelt period will result in larger peak flows.

MISSOURI RIVER DRAINAGE

Snow - There is a heavy snowpack along the eastern slopes of the Continental Divide from Glacier National Park to Yellowstone National Park. Interior ranges such as the Tobacco Root, Gravelly, Big Belt and Little Belt Mountains have an above average snowpack. Snow cover in the Gallatin drainage, Snowy and Crazy Mountains is near average. Melting of the snowpack during April was about normal. Higher elevation courses showed increases in water contents. The snowpack is generally 130 to 150 percent average in most drainages.

Special May 15 snow surveys are scheduled for heavy snowpack areas.

Streamflow - Large runoff volumes are forecast for streams with headwaters along the Continental Divide. Above average flows are expected for other streams. Streams in the southwestern portion should have a little less runoff than last year, while streams farther north can expect more runoff. During April, runoff was about average. With normal spring weather conditions, peak flows on unregulated streams originating from heavy snowpack areas are expected to be 30 to 60 percent above average. Peak flows on other streams should be near average to 30 percent above average.

YELLOWSTONE RIVER DRAINAGE

Snow - Snowpack in the Yellowstone and Big Horn River headwaters is well above average, but is a little less than the record or near record amounts measured last year. Snowpack in the northern portion of the Big Horn Mountains is also less than last year but only a little above average. Melting of the snowpack during April was near normal. Water contents at higher elevation snow courses increased during the month.

Streamflow - Runoff during April was near to above average. Streamflow during the snowmelt period is forecast to be above average on all streams. This season's forecast is for a smaller volume than last year's runoff on the Yellowstone and Little Big Horn River and a little larger on the Big Horn River. Peak flows this spring are expected to be 10 to 30 percent above average if spring weather conditions are normal.



SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF:	
		Last Year	Average
<u>COLUMBIA RIVER DRAINAGE</u>			
Kootenai	18	139	156
Flathead	28	130	148
Upper Clark Fork	22	131	163
Lower Clark Fork	11	125	152
Bitterroot	11	127	167
<u>MISSOURI RIVER DRAINAGE</u>			
Jefferson	19	102	154
Madison	14	85	126
Gallatin	12	74	109
Missouri Main Stem	11	104	138
Judith-Musselshell	8	91	118
Marias-Teton-Sun	7	124	150
St. Mary	8	118	166
<u>YELLOWSTONE RIVER DRAINAGE</u>			
Yellowstone	25	82	127
Little Big Horn	7	84	107
-3-			

Average based on 1953-67 period.

SOIL MOISTURE

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

COLUMBIA RIVER BASIN

Kootenai

Baree Trail	3800	48	7.5	5/01	6.6	6.4	6.6
Murphy Lake R. S.	3000	48	22.6	5/01	22.4	22.2	22.0
Raven R. S.	3050	48	23.0			16.0	20.9

Flathead

Desert Mountain	5600	54	8.4	4/27	8.8	9.1	8.7
Marias Pass	5250	54	6.5	5/01	7.7	8.4	6.1

Clark Fork

Black Pine	7100	48	10.0	4/25	7.6	7.9	7.5
Lubrecht Forest	4100	48	26.8	5/03	23.9	24.7	-
Seeley Lake R. S.	4030	48	11.9	5/01	11.9	11.9	11.9
Skalkaho Summit	7260	48	10.8	4/25	9.8	10.2	10.0

Bitterroot

Gibbons Pass	7100	48	7.1	5/01	4.3	6.4	6.0
Lolo Pass	5250	48	10.6	4/25	6.0	6.7	7.1

MISSOURI RIVER BASIN

Beaverhead

Lakeview	6700	48	15.3	5/01	16.4	10.9	13.2
----------	------	----	------	------	------	------	------

Madison

West Yellowstone	6700	48	6.5	4/27	3.3	3.5	3.2
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Gallatin

Bridger Bowl	7250	48	17.0	5/01	15.9	16.3	16.3
College Site No. 2	4856	54	17.7	4/28	16.8	17.1	15.7
Lick Creek	6860	48	18.8			17.5	18.0
Twenty-One Mile	7150	48	10.0			6.6	4.4

Missouri Main Stem

Kings Hill	7420	48	11.8	4/27	4.8	5.1	7.1
Stemple Pass	6350	48	5.9	4/28	5.5	5.5	5.1

Milk

Beaver Creek	3950	48	20.9	4/28	15.5	16.3	-
Rocky Boy	4700	36	10.1	4/28	9.5	9.9	-

Yellowstone

Battle Ridge	6020	48	17.6	5/01	13.2	16.4	15.1
Northeast Entrance	7350	48	9.4	4/29	9.2	-	-

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage			
			This Year	Last Year	Average	
COLUMBIA RIVER BASIN						
Kootenai	Koocanusa	4,965.0	200.6	-	-	
Flathead	Hungry Horse	3,428.0	1,255.0	1,647.0	1,974.0	
	Flathead Lake	1,791.0	976.2	1,083.0	933.7	
	Camas (4)	45.2	44.1	30.2	35.1	
	Mission Valley (8)	100.3	34.6	54.2	42.0	
Clark Fork	Georgetown Lake	31.0	25.0	24.0	21.7	
	Noxon Rapids	334.6	181.5	148.5	144.9	
	Nevada Creek	12.6	9.2	12.0	8.6	
Bitterroot	Como	34.9	11.1	20.0	17.3	
	Painted Rocks	31.7	5.5	28.4	27.3	
MISSOURI RIVER BASIN						
Beaverhead	Clark Canyon	328.9	155.0	143.7	139.1	
	Lima	84.0	61.3	60.6	42.7	
Ruby	Ruby	38.8	34.2	31.5	35.1	
Madison	Hebgen Lake	377.5	182.3	241.2	195.9	
	Ennis Lake	41.0	36.3	36.1	35.3	
Gallatin	Middle Creek	8.0	4.9	3.8	4.6	
Missouri	Canyon Ferry	2,043.0	1,533.0	1,336.0	1,572.0	
	Hauser & Helena	61.9	61.3	61.9	57.0	
	Lake Helena	10.4	10.2	10.4	8.8	
	Holter Lake	81.9	67.1	79.6	63.6	
	Smith River	10.7	7.1	-	8.7	
	Bair	7.0	5.6	-	5.8	
	Martinsdale	23.1	9.0	-	10.1	
	Deadman's Basin	72.2	58.6	-	51.9	
	Fort Peck	19,410.0	16,550.0	16,660.0	11,190.0	
	Sun	Gibson	105.0	34.8	51.7	58.0
		Willow Creek	32.3	25.7	28.1	24.3
		Piskhun	32.0	28.6	26.7	21.3
Marias	Lower Two Medicine	16.6		8.9	1.9	
	Four Horns	19.2		13.6	12.5	
	Swift	30.0	13.8	23.6	24.2	
	Lake Frances	112.0	88.0	89.1	86.8	
	Tiber	1,347.0	557.6	481.1	654.6	
Milk	Fresno	127.2	123.5	123.5	107.3	
	Nelson	66.8	49.4	49.4	45.6	
	Lake Sherburne	66.1	36.8	34.2	19.4	
Yellowstone	Mystic Lake	20.8	2.2	1.8	3.3	
	Tongue River	68.0		37.2	27.4	
	Cooney	27.5	17.0	19.1	15.9	
Bighorn	Bighorn Lake	1,356.0	791.8	776.6	732.4	

PEAK FLOWS (MAXIMUM MEAN DAILY) (Av. flow for 24 hrs. on day of greatest flow)

FORECAST POINT	PEAK FLOW (SECOND FEET)	
	Forecast Range	Average

COLUMBIA RIVER DRAINAGE

Blackfoot River near Bonner	13,000-16,000	10,388
Clark Fork River above Missoula	25,000-28,000	17,024
Bitterroot River near Darby	9,000-11,000	6,560
Clark Fork River below Missoula	45,000-55,000	30,220
Clark Fork River at St. Regis	60,000-70,000	40,133
N. Fk. Flathead near Columbia Falls	30,000-32,000	24,540
M. Fk. Flathead near Columbia Falls	31,000-33,000	26,226

MISSOURI RIVER DRAINAGE

Big Hole River near Melrose	9,500-11,000	7,633
Jefferson River near Sappington	12,000-15,000	9,129
Madison River near West Yellowstone	1,500- 1,750	1,335
Gallatin River near Gateway	5,500- 6,500	4,910
Gallatin River near Logan	5,000- 6,000	4,710
Missouri River at Toston	21,000-24,000	16,418
Belt Creek near Monarch	1,700- 2,300	2,114
Marias River near Shelby	9,000-10,500	13,801
S. Fk. Musselshell at Martinsdale	800- 950	728

YELLOWSTONE RIVER DRAINAGE

Yellowstone River at Livingston	23,500-26,000	19,153
Boulder River near Big Timber	5,500- 6,500	5,032
Stillwater River near Absaroka	7,000- 8,500	6,562
Clarks Fork River near Belfry	8,500- 9,500	7,313
Rock Creek near Red Lodge	1,400- 1,700	1,122
Yellowstone River at Billings	45,000-55,000	41,126



STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average

COLUMBIA RIVER BASIN

FISHER RIVER					
Libby (near)	290	136	May-Sept	297	214
	270	136	May-July	273	198
KOOTENAI RIVER					
Libby (at)	9550	128	May-Sept	8354	7444
	8450	132	May-July	7215	6375
YAAK RIVER					
Troy (near)	575	125	May-Sept	551	458
	545	125	May-July	531	434
KOOTENAI RIVER					
Leonia (at)	11000	131	May-Sept	9662	8397
	9650	133	May-July	8402	7271
	7500	130	May-June	6594	5662
RACETRACK CREEK					
Anaconda (near)	49.0	151	May-Sept	36.0	32.5
	39.0	150	May-July	28.7	26.0
FLINT CREEK					
Boulder Creek (below)(3)	90.0	144	May-Sept	58.4	62.4
	72.0	150	May-July	42.4	47.9
MIDDLE FORK ROCK CREEK					
Philipsburg (near)	111	159	May-Sept	88.9	69.7
	100	160	May-July	80.6	62.4
NEVADA CREEK					
Finn (near)	32.2	192	May-Sept		17.0
	30.0	192	May-July		15.6
BLACKFOOT RIVER					
Bonner (near)	1330	148	May-Sept	1136	896
	1200	150	May-July	1034	801
	1040	154	May-June	898	676
CLARK FORK RIVER					
Milltown (above)(4)	1040	160	May-Sept	688	651
	900	162	May-July	601	555
	750	164	May-June	517	458
CLARK FORK RIVER					
Missoula (above)	2370	153	May-Sept	1824	1547
	2100	155	May-July	1635	1356
	1790	158	May-June	1415	1134

(3) Sum Flint Creek at Maxville and Boulder Creek at Maxville.

(4) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.



STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
WEST FORK BITTERROOT RIVER					
Conner (near)(5)	245	162	May-Sept	229	152
	230	164	May-July	214	140
EAST FORK BITTERROOT RIVER					
Conner (near)	240	153	May-Sept	208	157
	220	156	May-July	193	141
BITTERROOT RIVER					
Darby (near)	755	150	May-Sept	700	504
	700	151	May-July	659	463
	590	148	May-June	584	399
SKALKAHO CREEK					
Hamilton (near)	76.5	146	May-Sept	60.3	52.9
	68.0	148	May-July	53.4	46.0
BURNT FORK CREEK					
Stevensville (near)(10)	48.0	149	May-Sept	39.8	32.2
	42.0	152	May-July	35.7	27.7
BITTERROOT RIVER					
Missoula (at)(6)	1940	147	May-Sept	1766	1319
	1800	148	May-July	1662	1212
	1520	148	May-June	1452	1028
CLARK FORK RIVER					
Missoula (below)	4310	150	May-Sept	3590	2866
	3900	152	May-July	3297	2568
	3310	153	May-June	2867	2162
ST. REGIS RIVER					
St. Regis (near)	392	152	May-Sept	370	258
	375	155	May-July	350	242
CLARK FORK RIVER					
St. Regis (at)	5900	153	May-Sept	4935	3859
	5400	156	May-July	4512	3454
	4600	158	May-June	3912	2912
NORTH FORK FLATHEAD RIVER					
Columbia Falls (near)	2550	137	May-Sept	2108	1857
	2300	137	May-July	1908	1680
	1900	136	May-June	1572	1396
MIDDLE FORK FLATHEAD RIVER					
West Glacier (near)	2300	130	May-Sept	2112	1764
	2150	132	May-July	1933	1624
	1800	133	May-June	1584	1354
SOUTH FORK FLATHEAD RIVER					
Columbia Falls (near)(7)	2900	137	May-Sept	2521	2109
	2750	138	May-July	2392	1986
	2350	137	May-June	2066	1718

(5) Adjusted for storage in Painted Rocks Reservoir.

(6) Difference in observed flow Clark Fork above and below Missoula.

(7) Adjusted for storage in Hungry Horse Reservoir.

(10) Adjusted for diversion into Sunset Highline Canal.

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
FLATHEAD RIVER					
Columbia Falls (at)(7)	8000	136	May-Sept	6878	5867
	7350	136	May-July	6368	5403
	6200	136	May-June	5342	4556
SWAN RIVER					
Big Fork (near)	750	126	May-Sept	705	597
	650	126	May-July	613	516
	510	126	May-June	484	405
FLATHEAD RIVER					
Polson (near)(8)	9500	137	May-Sept	7989	6926
	8600	135	May-July	7421	6385
	7100	133	May-June	6199	5351
CLARK FORK RIVER					
Plains (near)(8)	16000	144	May-Sept	13337	11126
	14500	144	May-July	12248	10092
	12000	142	May-June	10314	8446
THOMPSON RIVER					
Thompson Falls (near)	285	121	May-Sept	342	235
	250	122	May-July	306	205
PROSPECT CREEK					
Thompson Falls (at)	165	140	May-Sept	163	118
	150	138	May-July	152	109
CLARK FORK RIVER					
Whitehorse Rapids (at)(9)	17800	144	May-Sept	15006	12311
	15900	143	May-July	13766	11111
	13200	142	May-June	11628	9277

(7) Adjusted for storage in Hungry Horse Reservoir.

(8) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.

(9) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.



STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average

MISSOURI RIVER BASIN

BEAVERHEAD RIVER					
Grant (near)(11)(12)	115	161	May-Sept	248	71.5
	105	189	May-July	214	55.5
RUBY RIVER					
Alder (near)	91.0	127	May-Sept		71.6
	76.0	129	May-July		58.6
BIG HOLE RIVER					
Melrose (near)	880	144	May-Sept		611
	800	142	May-July		563
BIRCH CREEK					
Glen (near)	18.0	145	May-Sept		12.4
	15.0	146	May-July		10.3
BOULDER RIVER					
Boulder (near)	111	156	May-Sept		71.0
	105	156	May-July		67.6
JEFFERSON RIVER					
Sappington (at)(12)	1230	151	May-Sept		817
	1100	152	May-July		725
WILLOW CREEK					
Harrison (near)	24.0	178	May-Sept		13.5
	21.5	175	May-July		12.3
MADISON RIVER					
West Yellowstone (near)	220	120	May-Sept	273	184
	164	123	May-July	202	133
MADISON RIVER					
Grayling (near)(13)	545	145	May-Sept	619	376
	425	150	May-July	477	284
MADISON RIVER					
McAllister (near)(14)	870	135	May-Sept	1148	643
	685	138	May-July	895	495
GALLATIN RIVER					
Gateway (near)	505	115	May-Sept	700	440
	430	117	May-July	592	367
BRIDGER CREEK					
Bozeman (near)	19.0	108	May-Sept	37.3	17.5
	17.5	108	May-July	34.0	16.2

(11) Adjusted for storage in Lima Reservoir.

(12) Adjusted for storage in Clark Canyon Reservoir.

(13) Adjusted for storage in Hebgen Lake.

(14) Adjusted for storage in Hebgen and Ennis Lakes.

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
HYALITE CREEK					
Bozeman (near)(15)	39.7	114	May-Sept		34.9
	34.0	113	May-July		30.0
GALLATIN RIVER					
Logan (at)	485	117	May-Sept		413
	410	120	May-July		341
MISSOURI RIVER					
Toston (at)(16)	2600	144	May-Sept	2840	1809
	2230	145	May-July	2433	1540
SHEEP CREEK					
White Sulphur Springs (near)	25.0	143	May-Sept		17.5
	21.5	143	May-July		15.0
SUN RIVER					
Gibson Dam (at)(17)	780	136	May-Sept	701	574
	720	137	May-July	644	525
BELT CREEK					
Monarch (near)	147	143	May-Sept		103
	137	146	May-July		93.9
MISSOURI RIVER					
Fort Benton (at)(18)	4100	140	May-Sept		2915
	3550	146	May-July		2428
TWO MEDICINE CREEK					
Browning (near)(19)	300	131	May-Sept		229
	290	133	May-July		218
BADGER CREEK					
Browning (near)	154	127	May-Sept		122
	135	128	May-July		105
CUT BANK CREEK					
Cut Bank (at)	143	136	May-Sept		105
	128	134	May-July		95.5
MARIAS RIVER					
Shelby (near)(20)	750	141	May-Sept	520	532
	720	142	May-July	505	509

(15) Adjusted for storage in Middle Creek Reservoir.

(16) Adjusted for storage in Hebgen and Ennis Lakes and Clark Canyon Reservoir.

(17) Adjusted for storage in Gibson Reservoir and diversions.

(18) Adjusted for storage in Canyon Ferry Reservoir.

(19) Adjusted for storage in Two Medicine Reservoir and diversions into Two Medicine Canal.

(20) Adjusted for storage in Two Medicine, Four Horns, Lake Frances and Swift Reservoirs.

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
MISSOURI RIVER					
Virgelle (at)(21)	5000	141	May-Sept		3554
	4400	145	May-July		3029
SOUTH FORK JUDITH RIVER					
Utica (near)	17.2	148	May-Sept	10.5	11.6
	16.0	148	May-July	9.1	10.8
MISSOURI RIVER					
Landusky (near)(21)	5600	142	May-Sept	4821	3941
	4900	146	May-July	4066	3346
NORTH FORK MUSSELSHELL RIVER					
Delpine (near)	6.2	132	May-Sept	4.7	4.7
	5.1	134	May-July	4.1	3.8
SOUTH FORK MUSSELSHELL RIVER					
Martinsdale (above)	52.5	125	May-Sept	45.0	41.8
	50.0	126	May-July	42.8	39.6
MISSOURI RIVER					
Fort Peck Dam (below)(22)	53000	143	May-Sept		3713
	4800	148	May-July		3225
MILK RIVER					
Eastern Crossing (at)	200	91	May-Sept	190	220
MISSOURI RIVER					
Wolf Point (near)(22)	5600	142	May-Sept		3938
	5000	146	May-July		3423
MISSOURI RIVER					
Williston, N. D. (near)(29)	13500	140	May-Sept		9625
	12000	146	May-July		8227

SASKATCHEWAN RIVER BASIN

ST. MARY RIVER					
Babb (near)(30)	565	120	May-Sept		472
	490	120	May-July		407

- (21) Adjusted for storage in Canyon Ferry and Tiber Reservoirs.
 (22) Adjusted for storage in Canyon Ferry, Tiber and Fort Peck Reservoirs.
 (29) Adjusted for storage in Canyon Ferry, Tiber, Fort Peck, Buffalo Bill, Boysen and Yellowtail Reservoirs. Sum Yellowstone River near Sidney and Missouri River near Culbertson.
 (30) Adjusted for storage in Lake Sherburne.

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average

YELLOWSTONE RIVER BASIN

YELLOWSTONE RIVER					
Corwin Springs (at)	2340	130	May-Sept	2607	1804
	1950	130	May-July	2157	1498
YELLOWSTONE RIVER					
Livingston (near)	2630	130	May-Sept		2025
	2170	130	May-July		1672
BOULDER RIVER					
Big Timber (at)	445	132	May-Sept		336
	420	133	May-July		316
STILLWATER RIVER					
Absarokee (near)(25)	700	130	May-Sept		538
	600	132	May-July		454
CLARKS FORK RIVER					
Belfry (at)	740	134	May-Sept	812	561
	670	131	May-July	713	510
ROCK CREEK					
Red Lodge (near)	140	135	May-Sept	140	104
	110	138	May-July	106	79.9
YELLOWSTONE RIVER					
Billings (at)	4950	133	May-Sept	5308	3725
	4220	133	May-July	4442	3182
BIG HORN RIVER					
St. Xavier (near)(26)	2300	144	May-Sept	2276	1599
	2170	144	May-July	2050	1502
LITTLE BIG HORN RIVER					
Lodgegrass (near)(28)	130	117	May-Sept	135	111.2
	115	118	May-July	116	97.4
YELLOWSTONE RIVER					
Miles City (at)(27)	7400	136	May-Sept		5434
	6600	140	May-July		4761
YELLOWSTONE RIVER					
Sidney (near)(27)	7800	140	May-Sept		5572
	7000	141	May-July		4958

(25) Adjusted for storage in Mystic Lake.

(26) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake and Yellowtail Reservoirs.

(27) Adjusted for storage in Buffalo Bill, Boysen and Yellowtail Reservoirs.

(28) Sum Little Big Horn below Pass Creek and Lodgegrass Creek near Wyola.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

COLUMBIA RIVER BASIN

KOOTENAI RIVER

Bald Eagle Peak	5700	5/05	176	94.4	80.9	-
Banfield Mountain	5600	5/04	69	35.4	29.3	-
Banfield Mountain Pillow	5600	5/04	SP	30.2	25.6	-
Baree Creek	5500	5/01	140	69.3	59.4	48.4
Baree Midway	4600	5/01	101	49.7	38.5	35.8
Baree Trail	3800	5/01	4	1.8	0.0	1.0
Bear Mountain	5400	5/03	175	96.1	76.5	-
Bristow Creek	3900	5/04	0	0.0	3.3	-
Brush Creek	5000	4/25	30	13.7	10.0	10.7
Brush Creek Timber	5000	4/25	27	12.2	8.1	9.4
Cedar Grove	4100	5/05	20	9.8	14.6	-
Davis Creek	5400	5/02	61	32.5	33.9	-
Fernie	3500	4/26	14	7.6	2.3	3.0
Field	4200	4/27	19	7.0	1.0	1.0
Garver Creek	4250	5/02	7	3.2	11.0	-
Garver Creek Pillow	4250	5/02	SP	3.4	7.3	-
Glacier	4100	4/26	98	49.1	30.7	28.3
Graves Creek	4300	5/01	54	25.9	20.6	16.8
Gray Creek	5100	4/28	70	27.6	23.4	-
Halverson Creek	4850	5/03	117	64.8	56.4	-
Hawkins Lake	6450	5/02	108	49.5	44.4	-
Hawkins Lake Pillow	6450	5/02	SP	46.7	45.6	-
Keeler Creek	3300	5/03	0	0.0	2.0	-
Kicking Horse	5400	4/28	56	20.7	15.9	14.5
Kimberley	3800	4/30	0	0.0	0.0	8.5
Lost Soul	4800	5/04	20	10.1	12.2	-
Marble Canyon	5000	4/27	56	24.1	16.0	12.8
Morrissey Ridge	6100	5/01	97	49.0	31.7	28.8
New Fernie	4100	4/26	43	21.3	11.0	7.3
Poorman Creek	5100	5/05	91	50.0	40.1	-
Poorman Creek Pillow	5100	5/05	SP	46.9	38.9	-
Red Mountain	6000	4/27	64	30.0	27.0	21.0
Sinclair Pass	4500	4/28	26	9.7	5.5	2.3
Stahl Peak	6050	5/01	124	59.2	46.5	-
Sullivan Mine	5100	4/28	46	20.4	15.8	13.1
Upper Elk River	4400	4/28	4	1.9	1.0	2.2
Weasel Divide	5450	5/01	108	56.0	41.9	36.6

SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

FLATHEAD RIVER

Bassoo Peak	5150	4/26	26	12.7	10.0	8.3
Beaver Lake	5900	5/02	75	36.8	30.1	26.6
Big Creek	6750	4/25	148	68.4	57.6	51.7
Camp Misery	6400	4/26	153	70.1	59.0	50.5
Desert Mountain	5600	4/27	46	22.8	16.0	15.1
Fatty Creek	5500	4/25	75	34.9	28.4	23.2
Griffin Creek Divide	5150	4/26	31	15.0	9.6	8.1
Gunsight Lake	6300	5/02	126	57.1	43.5	44.5
Hell Roaring Divide	5770	4/26	99	48.0	34.7	33.5
Holbrook	4530	4/30	8	3.6	2.2	1.8
Logan Creek	4300	4/25	13	6.2	3.7	3.5
Marias Pass	5250	4/26	61	31.4	28.5	18.7
Mineral Creek	4000	5/03	38	18.2	16.6	15.3
Noisy Creek	3600	4/26	0	0.0	0.0	-
North Fork Jocko	6330	4/26	141	69.8	57.0	49.1
Spotted Bear Mountain	7000	5/02	34	16.8	10.4	12.2
Trinkus Lake	6100	5/02	119	61.9	49.5	47.1
Twin Creeks	3580	5/02	0	0.0	0.0	1.8
Upper Holland Lake	6200	5/02	109	56.7	42.5	39.7

CLARK FORK RIVER

Black Pine	7100	4/25	63	26.3	16.5	15.3
Black Pine Pillow	7100	4/25	SP	27.2	16.7	16.0
Combination	5600	4/25	19	8.2	3.0	-
Copper Bottom	5200	4/27	24	12.8	11.0	-
Copper Camp	6950	4/27	116	59.7	48.7	-
Copper Creek	5700	4/27	46	23.7	19.2	11.0
Copper Lake Creek	6100	4/27	87	44.8	35.7	-
Cotter Mine	6250	4/27	64	32.3	26.8	16.3
Coyote Hill	4200	4/26	18	8.9	6.2	2.9
Fred Burr Pass	8000	4/26	108	43.9	35.9	29.6
Heart Lake Trail	4800	4/28	78	38.7	29.5	17.2
Hoodoo Basin	6000	4/28	173	88.0	68.8	55.8
Hoodoo Basin Pillow	6000	5/01	SP	84.3	69.9	54.8
Hoodoo Creek	5900	4/28	168	85.9	66.1	52.0
Intergaard	6450	5/01	38	14.6	9.8	7.8
Lookout	5250	5/01	107	54.0	44.5	36.7
Lubrecht Flume	4800	4/26	0	0.0	0.0	-
Lubrecht Forest No. 3	5450	4/26	24	9.7	3.1	3.1
Lubrecht Forest No. 4	4650	4/26	0	0.0	0.0	0.2
Lubrecht Forest No. 6	4040	4/26	0	0.0	0.0	0.0
Lubrecht Hydroplot	4200	4/29	0	0.0	0.0	-

SP - Snow pillow observation - water content only.



SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

CLARK FORK RIVER (Continued)

North Fork Elk Creek	6250	4/29	49	22.6	10.5	-
North Fork Elk Creek Pillow	6250	4/29	SP	23.5	10.5	-
Peterson Meadows	7200	4/27	48	19.1	14.6	-
Red Lion	7100	4/26	76	29.6	20.9	18.0
Skalkaho Summit	7260	4/25	109	46.8	34.4	27.3
Slide Rock Mountain	7100	4/26	72	30.2	22.2	16.5
Southern Cross	6500	5/01	27	11.6	7.1	-
Storm Lake	7780	4/27	59	21.9	21.0	16.6
Stuart Mill	6500	5/01	18	8.2	5.7	-
Stuart Mountain	7400	5/01	107	49.3	45.4	32.6
TV Mountain	6800	4/28	82	34.7	26.3	20.0

BITTERROOT RIVER

Ambrose	6480	5/01	59	25.4	16.9	13.2
Gibbons Pass	7100	5/01	79	36.6	33.7	23.1
Lolo Pass	5230	4/26	106	51.9	39.9	32.7
Lost Horse	5940	4/27	110	51.4	44.8	34.0
Moose Creek	6200	5/01	50	24.0	18.4	12.3
Nez Perce Camp	5580	5/02	50	24.6	17.1	11.7
Nez Perce Pass	6570	5/02	60	28.0	21.3	13.9
Saddle Mountain	7940	5/01	97	41.8	38.6	28.0
Saddle Mountain Pillow	7940	5/01	SP	41.9	44.0	-
Savage Pass	6600	4/26	105	44.1	36.2	-
Twelvemile Creek	5600	4/27	76	36.1	23.7	-
Twelvemile Creek Pillow	5600	4/27	SP	31.6	19.2	-
Twin Lakes	6510	4/27	157	75.8	57.4	48.0
Twin Lakes Pillow	6400	4/27	SP	69.8	53.4	-

SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

MISSOURI RIVER BASIN

BEAVERHEAD RIVER

Bloody Dick	7600	4/27	43	18.1	18.6	11.0
Dad Creek Lake	8400	4/26	58	20.6	25.3	14.2
Elk Horn Springs	7800	4/27	38	15.1	13.1	9.2
Gold Stone	8100	4/27	62	25.3	25.9	16.0
Lakeview Canyon	6930	5/01	32	11.6	19.4	10.7
Lakeview Ridge	7400	5/01	26	10.4	17.0	9.0
Sawtelle Mountain	8715	4/27	103	43.7	53.5	-
White Pine Ridge	8850	4/26	29	7.8	8.0	6.5

RUBY RIVER

Branham Lakes	8850	4/27	89	39.2	49.0	-
Clover Meadow	8600	4/26	64	23.4	27.6	17.6
Divide	7900	4/26	40	13.8	18.8	9.0
Middle Mill Creek	7850	4/27	48	22.0	26.4	-
Notch	8500	4/26	63	24.3	25.6	15.0
Smuggler Mine	6960	4/27	27	10.5	12.2	-

BIG HOLE RIVER

Abundance Lake	8800	4/26	78	31.2	31.0	22.0
Calvert Creek	6450	4/26	45	19.2	12.9	-
Darkhorse Lake	8600	4/26	96	43.8	39.3	29.2
Foolhen	8280	4/26	73	30.0	24.9	19.1
Jahnke Creek	7340	4/27	40	17.6	16.8	-
Jahnke Lake Trail	7200	4/27	44	19.6	16.6	-
Mudd Lake	7650	4/26	78	33.4	27.4	-
Palisade Creek	8250	4/26	114	49.6	44.0	31.5
Slag-A-Melt Lake	8750	4/26	92	39.6	38.8	-

JEFFERSON RIVER

Copper Mountain	7700	4/30	40	14.6	11.2	10.4
Nez Perce Creek	6500	4/30	12	3.4	0.0	-
Picnic Grounds	6500	5/01	0	0.0	0.0	-
Pipestone Pass	7200	4/24	21	8.3	5.1	5.6
Rocker Peak	8000	4/24	61	23.8	21.5	-
Rocker Peak Pillow	8000	4/24	SP	22.9	22.8	-
Uncle Sam Gulch	6500	4/24	27	12.2	3.8	-

SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

MADISON RIVER

Big Springs	6500	4/26	38	19.8	27.5	17.0
Black Bear	7950	4/28	122	59.6	-	-
Black Bear Pillow	7950	4/28	SP	50.6	-	-
Black Canyon	7850	4/26	104	47.6	-	-
Black Moose	8125	4/26	116	53.6	-	-
Call Road	8050	4/26	49	16.6	16.6	11.8
Four Mile	6900	4/28	19	8.2	10.6	6.0
Hebgen Dam	6550	4/25	16	6.8	9.2	5.8
Island Park	6315	4/27	16	7.0	17.5	9.7
Lake Creek	6100	5/03	6	2.6	6.6	2.3
Latham Springs	7650	4/26	88	40.4	-	-
Lower Twin	7900	4/28	69	29.6	33.8	22.5
Lucky Dog	6900	4/26	58	29.2	-	-
Madison Plateau	7750	4/28	66	31.4	36.6	-
Madison Plateau Pillow	7750	4/28	SP	33.6	37.2	-
Norris Basin	7500	4/30	20	8.0	8.0	7.6
North Meadow	7500	4/28	37	13.0	14.4	7.8
Old Road	7250	4/26	76	37.2	-	-
Poachers Cabin	8000	4/26	100	46.0	-	-
Potomageton Park	7150	4/27	27	12.8	15.6	10.2
Sentinel Creek	8300	4/27	73	30.2	33.2	25.2
Tepee Creek	8000	5/03	55	21.0	-	14.3
Tepee Creek Pillow	8000	5/03	SP	17.7	-	-
Valley View	6500	4/27	28	12.8	24.5	13.0
West Yellowstone	6700	4/25	22	9.4	14.8	6.2
West Yellowstone Pillow	6700	4/27	SP	8.1	12.1	4.9
Whiskey Creek	6800	4/27	49	24.0	30.0	-
Whiskey Creek Pillow	6800	4/27	SP	22.8	-	-

GALLATIN RIVER

Arch Falls	7350	4/28	40	14.2	19.6	14.2
Bear Basin	8150	4/27	57	24.4	32.0	23.2
Bridger Bowl	7250	5/01	81	33.6	47.3	30.1
Bridger Bowl Pillow	7250	5/01	SP	33.7	45.4	29.0
Carrot Basin	9000	5/08	100	48.0	60.0	-
Carrot Basin Pillow	9000				45.5	-
Devils Slide	8100	4/28	68	26.1	35.8	25.7
Hood Meadow	6600	4/28	27	10.7	15.5	9.3
Lick Creek	6860	4/28	14	5.6	13.7	9.0
Lick Creek Pillow	6860	4/28	SP	6.4	12.8	8.3
Little Park	7400	4/27	49	18.8	23.1	17.0
Maynard Creek	6210	5/01	47	21.1	28.9	18.4
Maynard Creek Pillow	6210	5/01	SP	12.6	17.6	12.2
Shower Falls	8100	4/28	76	30.7	41.4	28.6
Shower Falls Pillow	8100	4/28	SP	29.8	36.7	26.7
Twenty-One Mile	7150	4/26	51	23.4	26.4	16.0

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

MISSOURI RIVER (Main Stem)

Boulder Mountain	7950	4/25	74	29.8	31.5	19.8
Chessman Reservoir	6200	5/01	6	2.3	2.7	3.2
Deadman Creek	6450	4/27	26	13.8	13.4	9.5
Deadman Creek Pillow	6450	4/27	SP	11.6	10.5	-
Elk Peak	8000	4/26	62	24.4	28.2	19.7
Grasshopper	7000	4/26	15	5.8	7.0	6.0
Kings Hill	7500	4/28	58	23.2	20.2	14.7
Stemple Pass	6600	5/01	47	17.8	12.2	10.8
Ten Mile Lower	6600	5/02	17	6.7	6.7	5.3
Ten Mile Middle	6800	5/02	44	17.3	14.8	11.6
Ten Mile Upper	8000	5/02	55	22.2	20.0	16.0

SUN-TETON-MARIAS RIVERS

Badger Pass	6900	5/02	128	64.6	49.6	42.0
Blue Lake	5900	5/02	78	44.6	31.2	-
Cabin Creek	5200	5/01	0	0.0	4.2	2.2
Five-Bull	5700	5/02	13	6.0	4.2	5.3
Freight Creek	6000	5/02	51	25.9	19.6	16.4
Goat Mountain	7000	5/04	36	15.2	14.8	11.8
Mount Lockhart	6400	4/27	88	43.0	29.6	-
Mount Lockhart Pillow	6400	4/27	SP	38.5	32.4	-
Waldron	5600	4/27	25	12.6	10.6	-
Waldron Pillow	5600	4/27	SP	14.8	14.2	-
Wrong Creek	5700	5/03	35	18.1	14.6	13.0
Wrong Ridge	6800	5/03	68	33.1	27.4	22.5

JUDITH RIVER

Avalanche	7100	5/03	71	26.2	26.6	-
Big Snowy	7150	5/03	71	24.9	25.4	-
Crystal Lake	6100	5/03	30	9.8	13.5	14.0
Rock Creek	5600	5/03	15	4.7	7.6	8.8
Spur Park	8100	4/27	79	34.2	32.8	24.0
Spur Park Pillow	8100	4/27	SP	36.8	31.4	-

MUSSELSHELL RIVER

Daisy Peak	7600	4/27	37	17.2	13.5	-
Eagle Creek	7000	4/26	39	17.2	18.5	-
Forest Lake	6400	4/26	34	14.8	15.0	-
Haymaker	8050	4/28	50	20.0	18.9	-
Johnson Park	6450	4/27	0	0.0	4.6	-

SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

MILK RIVER

Bear Paw Ski Area	5200				6.4	-
King Creek Saddle	4550	5/04	0	0.0	0.0	-
King Springs	4150	5/04	0	0.0	0.0	-
Mission Mountain	5050	5/04	0	0.0	0.0	-
Rocky Boy	4700	4/28	0	0.0	2.6	-
Rocky Boy Pillow	4700	4/28	SP	0.0	2.5	-

ST. MARY RIVER

Hudson Bay Divide	5800	5/01	68	29.7	26.0	21.5
Iceberg Lake No. 3	5600	5/03	99	52.6	40.3	32.9
Josephine Lower No. 9	4900	5/02	63	30.0	26.7	20.1
Mount Allen No. 7	5700	5/02	134	68.1	60.0	50.3
Piegian Pass No. 6	5500	5/02	121	62.8	53.0	43.6
Ptarmigan No. 8	5800	5/03	124	63.7	49.7	41.8

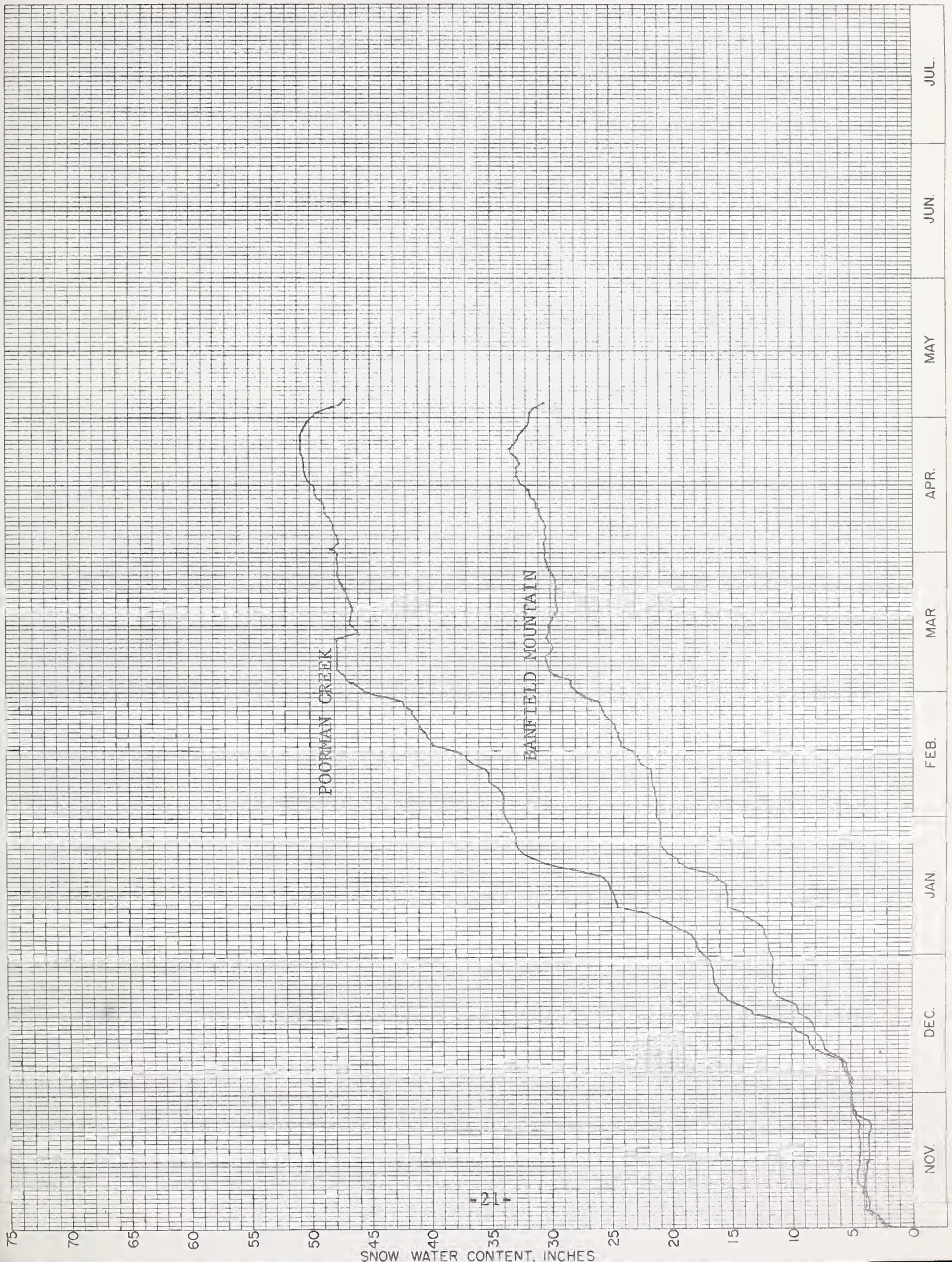
UPPER YELLOWSTONE RIVER

Bald Ridge	7500	4/28	31	12.4	17.7	12.5
Camp Senia	7890	4/28	29	10.3	9.2	8.2
Canyon	7750	4/30	46	18.3	21.6	15.3
Cooke Station	8150	4/28	67	26.7	31.7	19.0
Fisher Creek	9100	4/28	129	57.8	65.6	37.5
Fisher Creek Pillow	9100	4/28	SP	54.1	59.2	-
Grizzly Peak	8400	5/01	81	28.6	29.3	22.0
Independence	7850	4/28	48	21.6	32.0	17.9
Lake Camp	7850	4/30	28	9.5	16.5	7.8
Lupine Creek	7300	4/30	20	7.9	8.0	8.0
Mill Creek	7500	4/28	27	10.8	17.1	-
Monument Peak	8800	4/28	80	33.0	43.6	27.4
Northeast Entrance	7400	4/29	21	10.3	9.1	7.1
Northeast Entrance Pillow	7350	4/29	SP	8.6	10.5	7.0
Porcupine Ranger Station	6500	4/28	20	7.0	9.7	7.7
Sacajawea	6550	5/01	30	11.6	20.7	12.1
South Fork Shields	8100	4/28	75	30.0	37.9	27.2
Sylvan Pass	7100	5/01	25	11.4	20.2	10.9
Timberline Creek	8850	4/28	61	24.5	24.4	18.2
White Mill	8700	4/28	97	39.4	41.7	26.8

SP - Snow pillow observation - water content only.

SNOW PILLOW DATA
WATER YEAR 1972

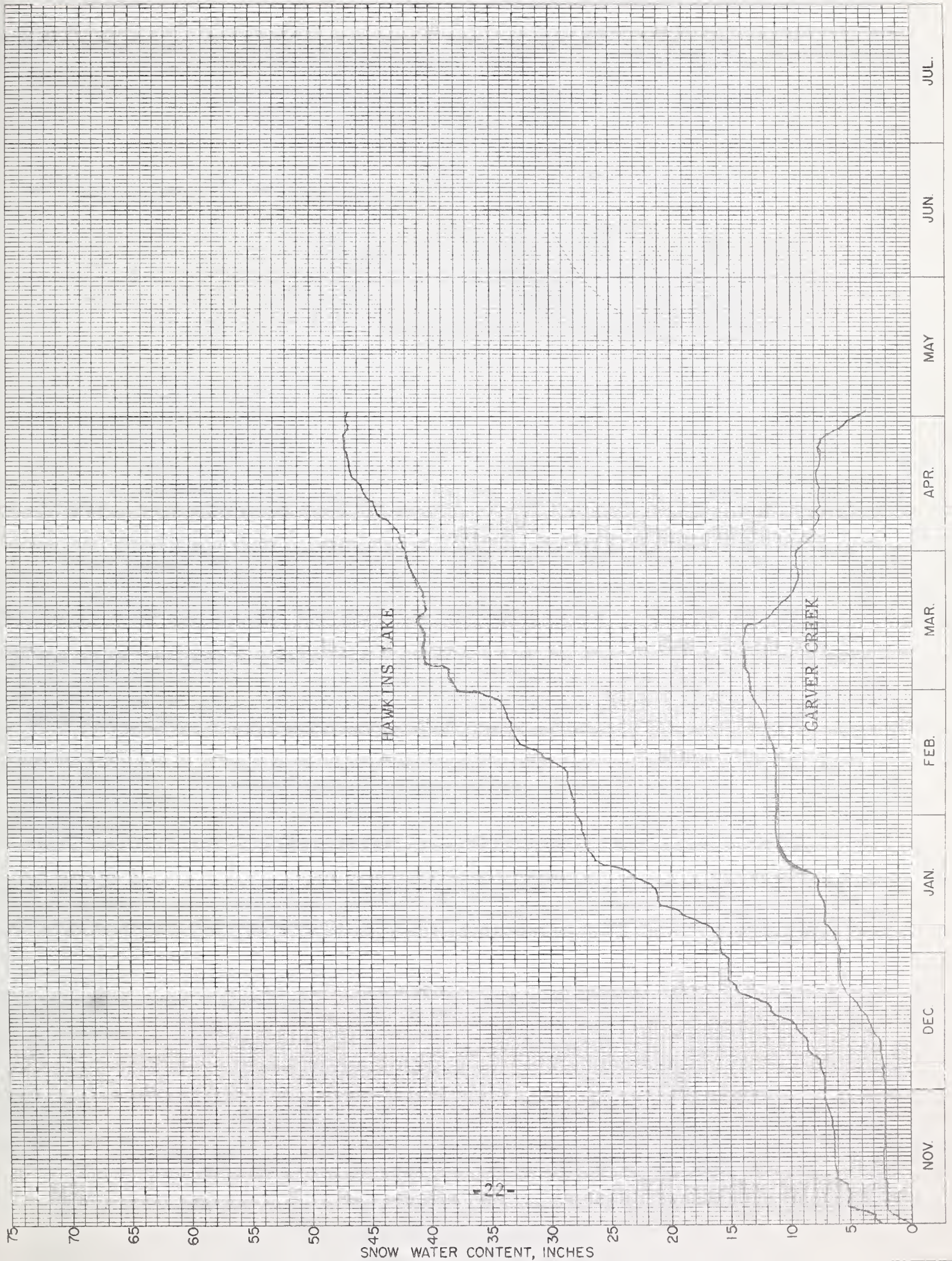
No. _____ Elev. _____ Drainage: KOOTENAI





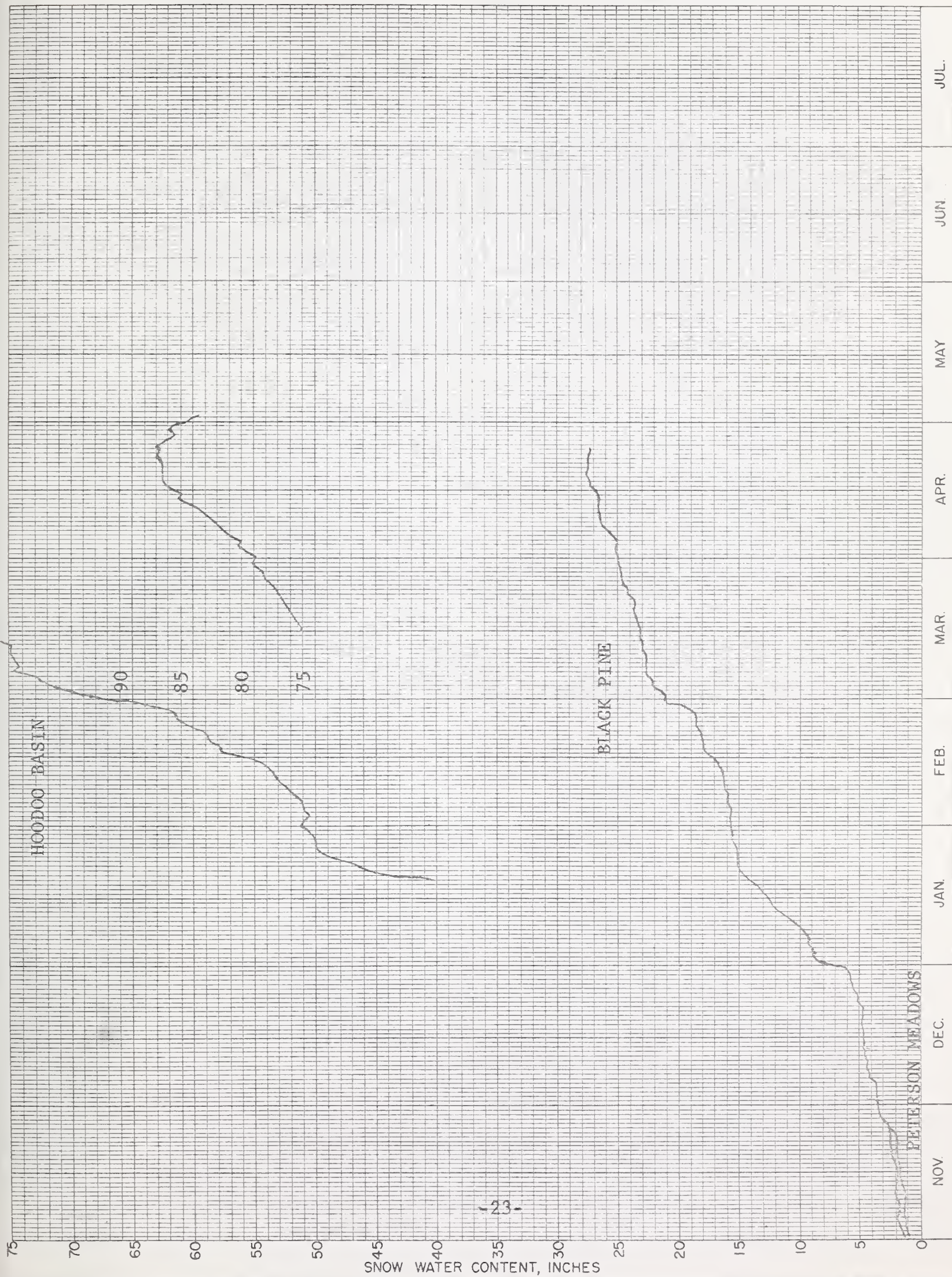
SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: KOOTENAI



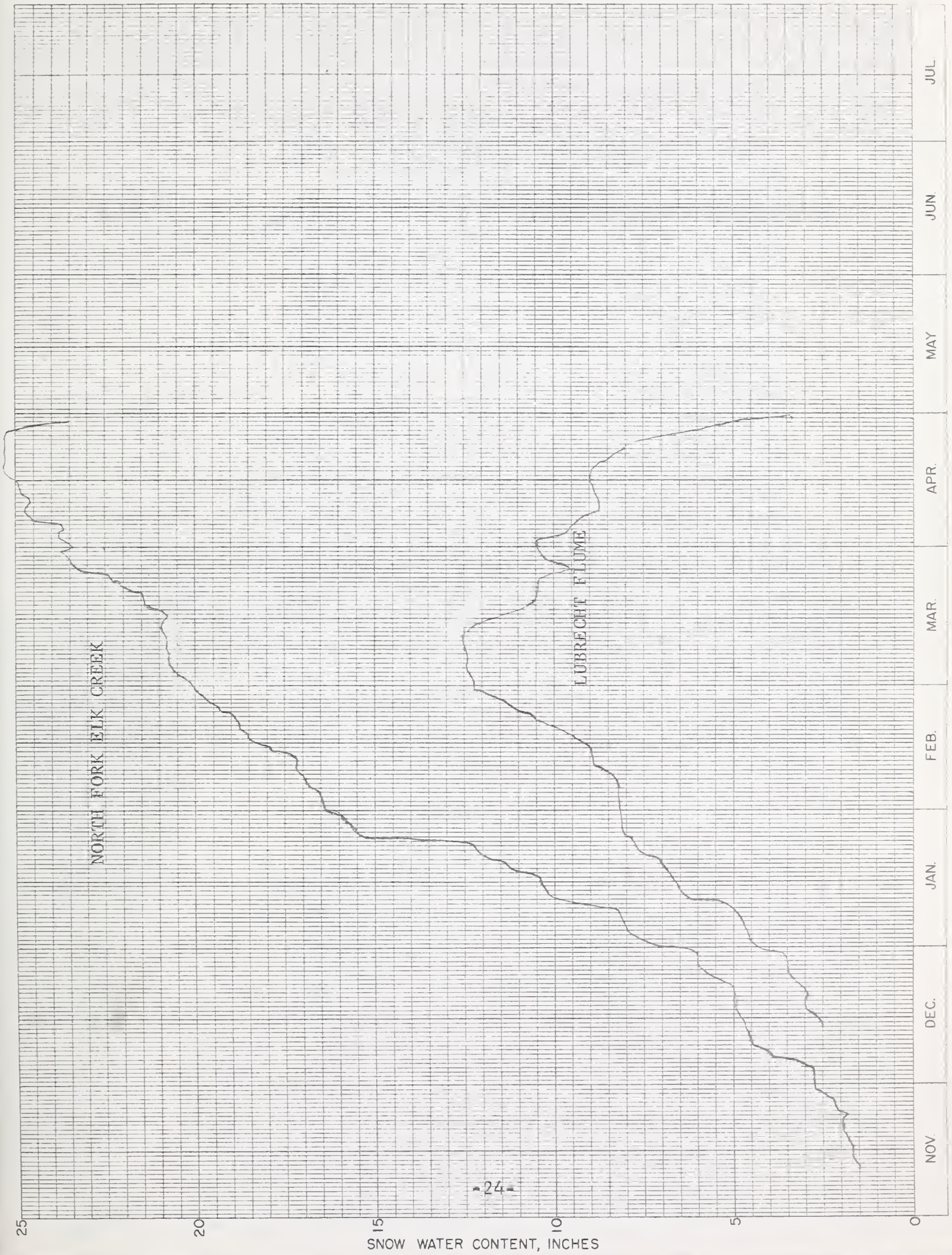
SNOW PILLOW DATA WATER YEAR 1972

No. _____ Elev. _____ Drainage: CLARK FORK



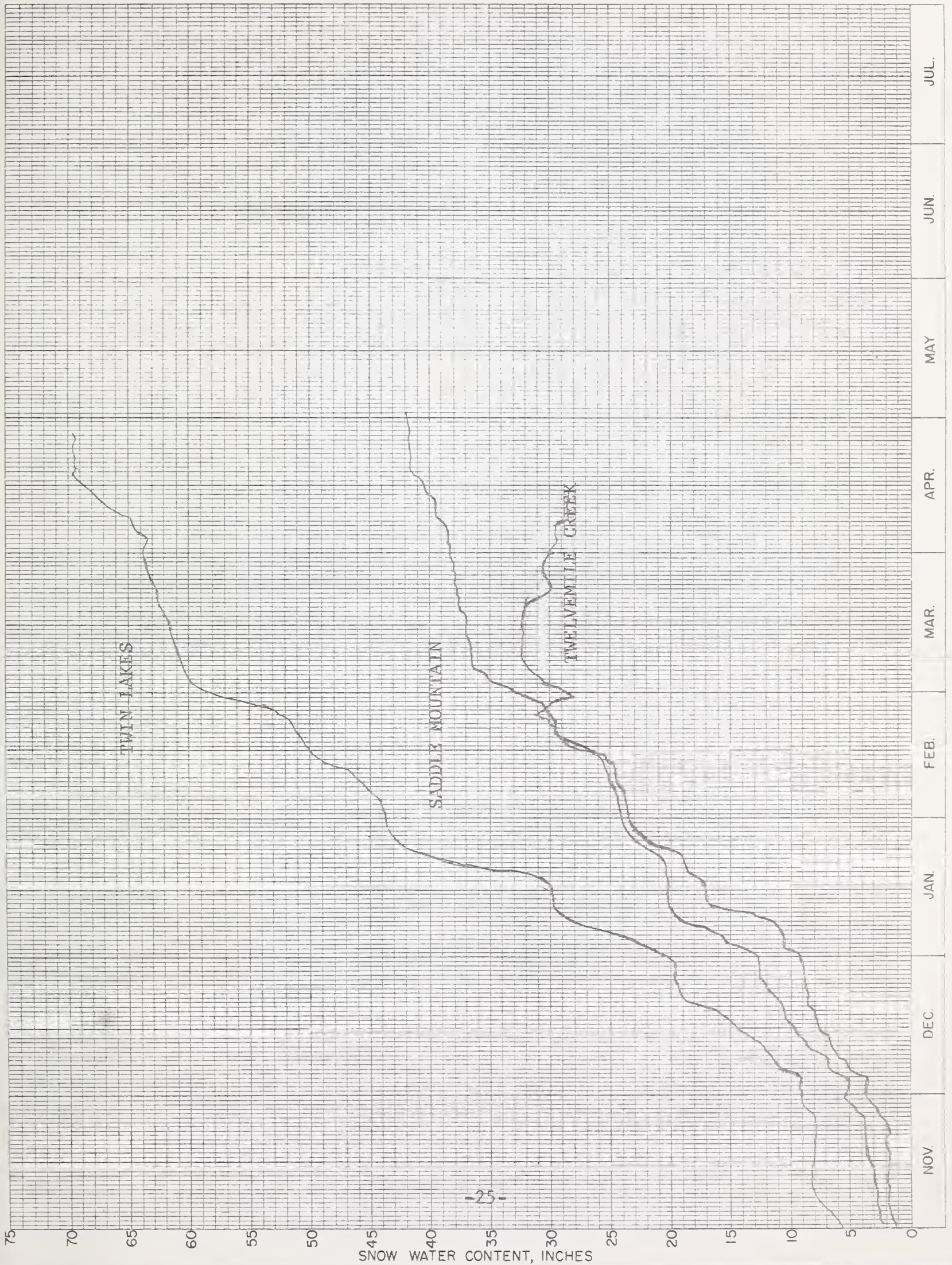
SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage. BLACKFOOT



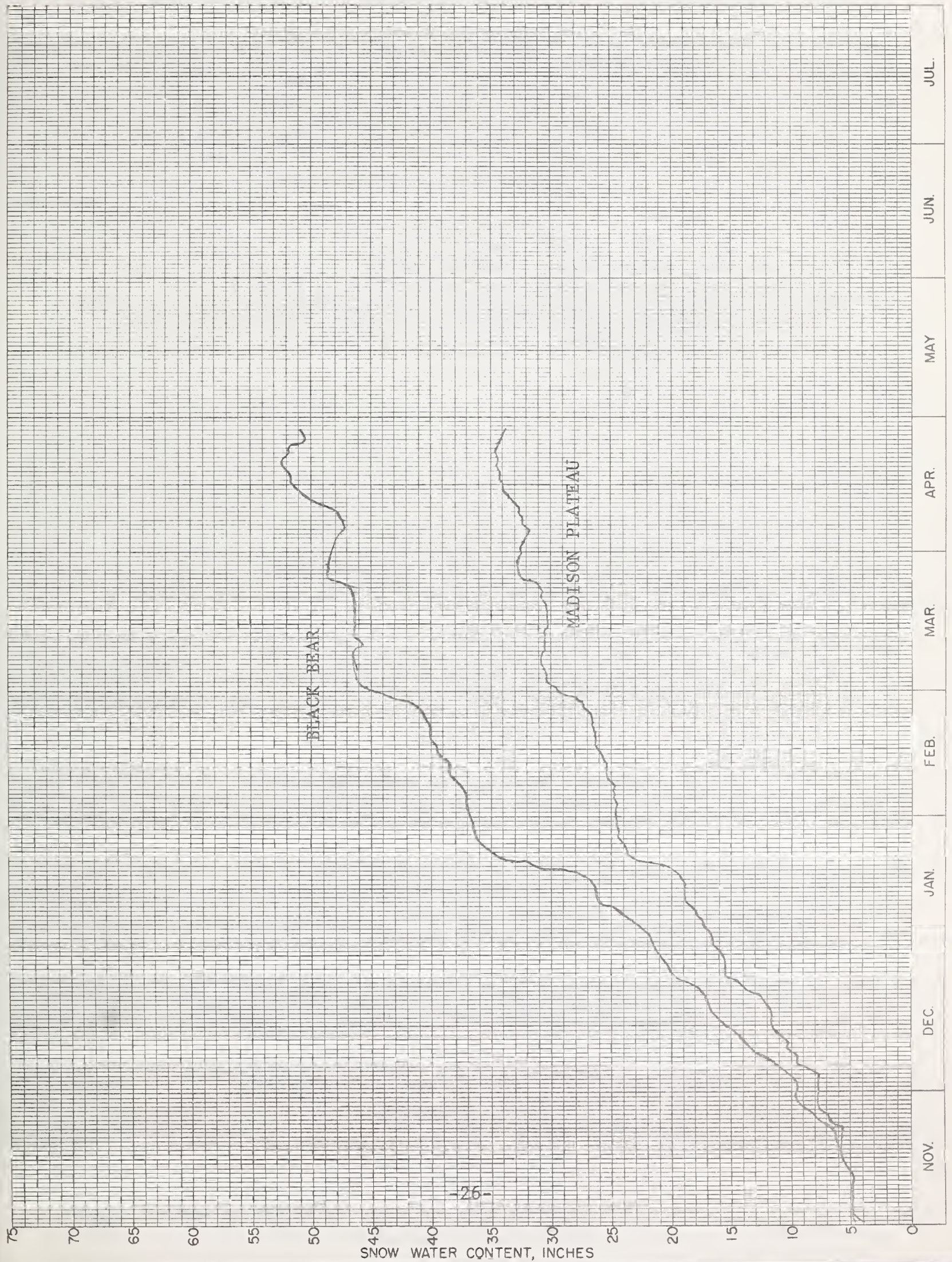
SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: BITTERROOT



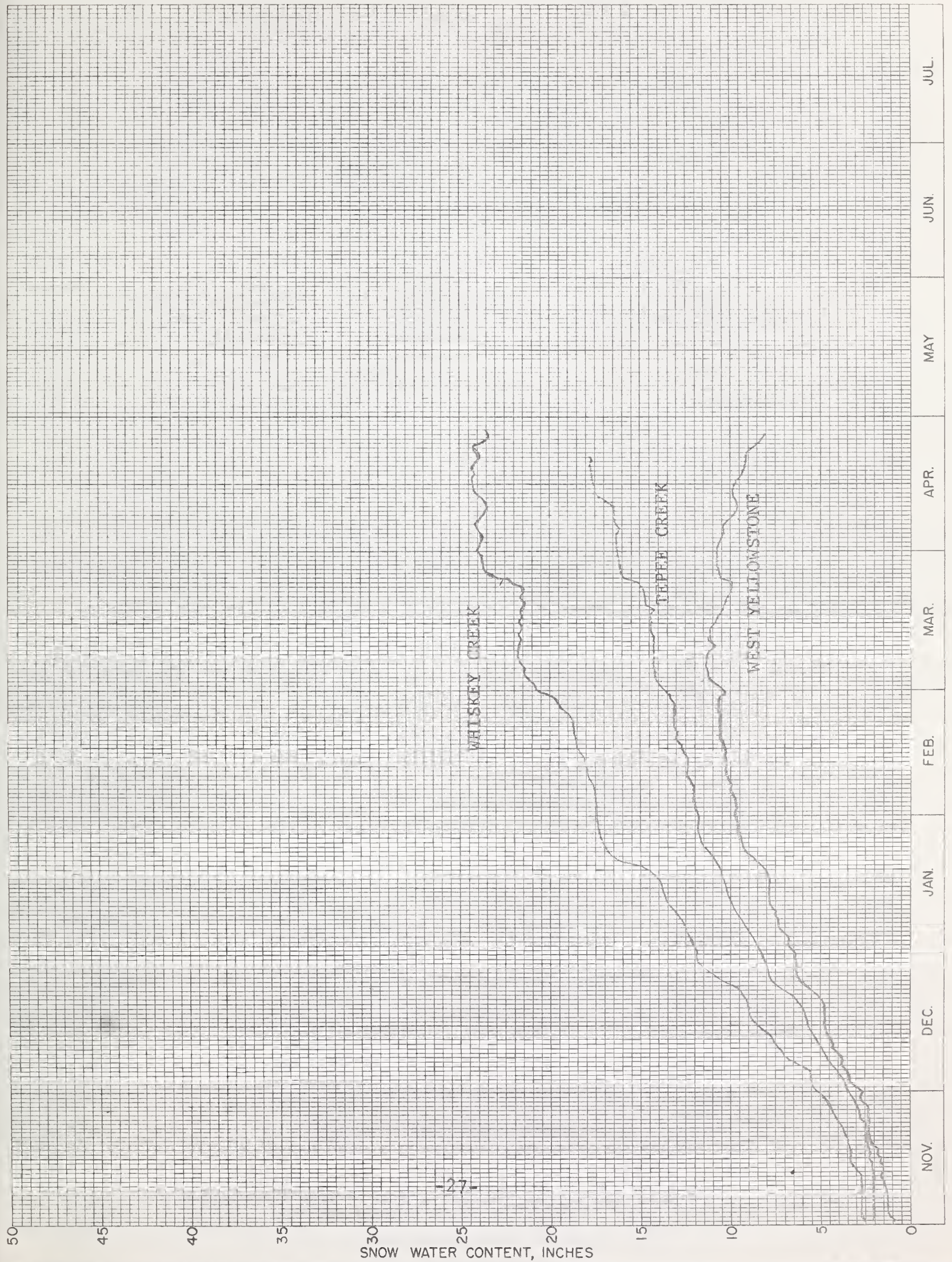
SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: MADISON



SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: MADISON



-27-

SNOW WATER CONTENT, INCHES



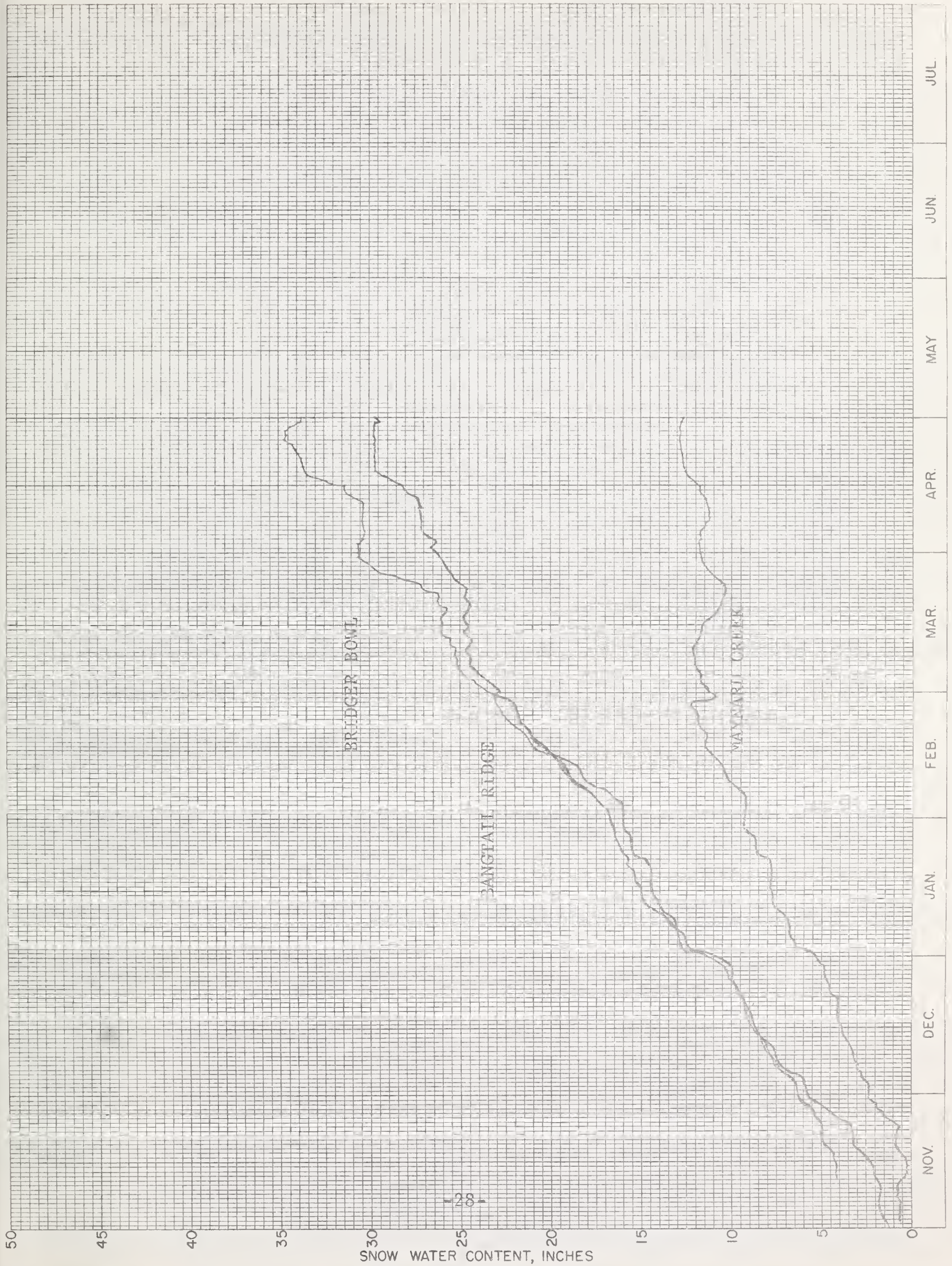
SNOW PILLOW DATA
WATER YEAR 1972

No. _____

Elev. _____

Drainage: _____

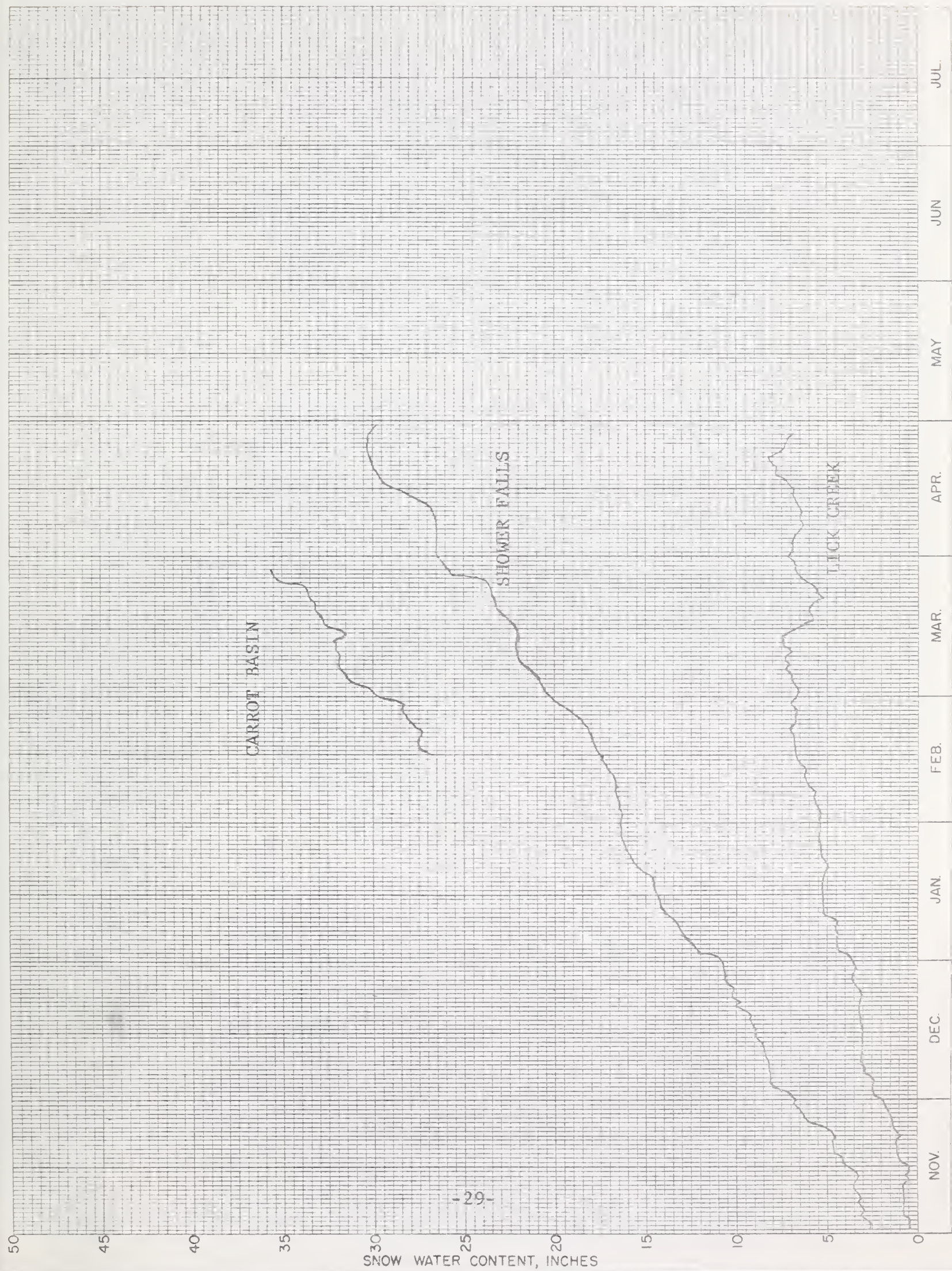
GALLATIN





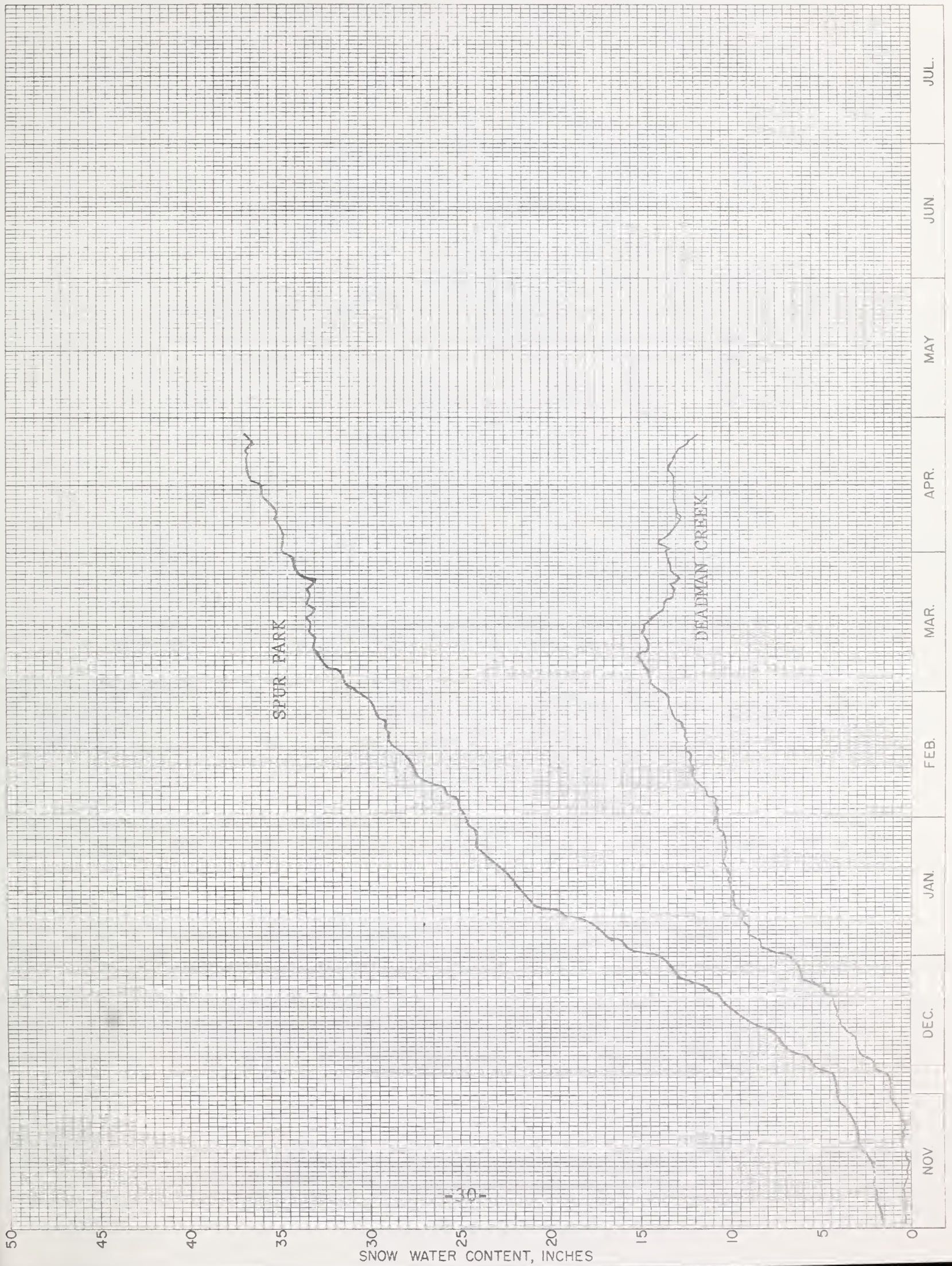
SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: GALLATIN



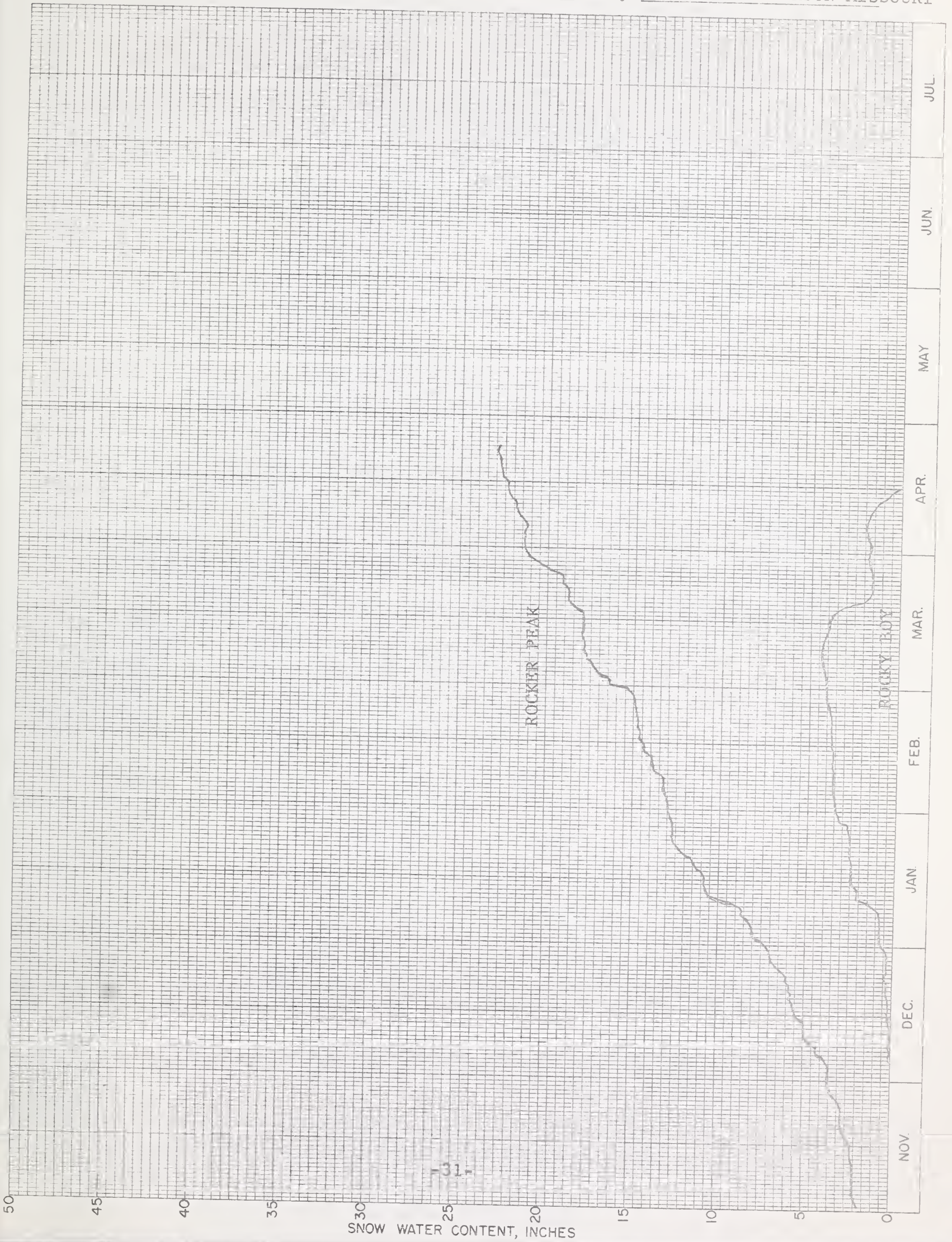
SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: JUDITH-JEFFERSON-MISSOURI



SNOW PILLOW DATA
WATER YEAR 1972

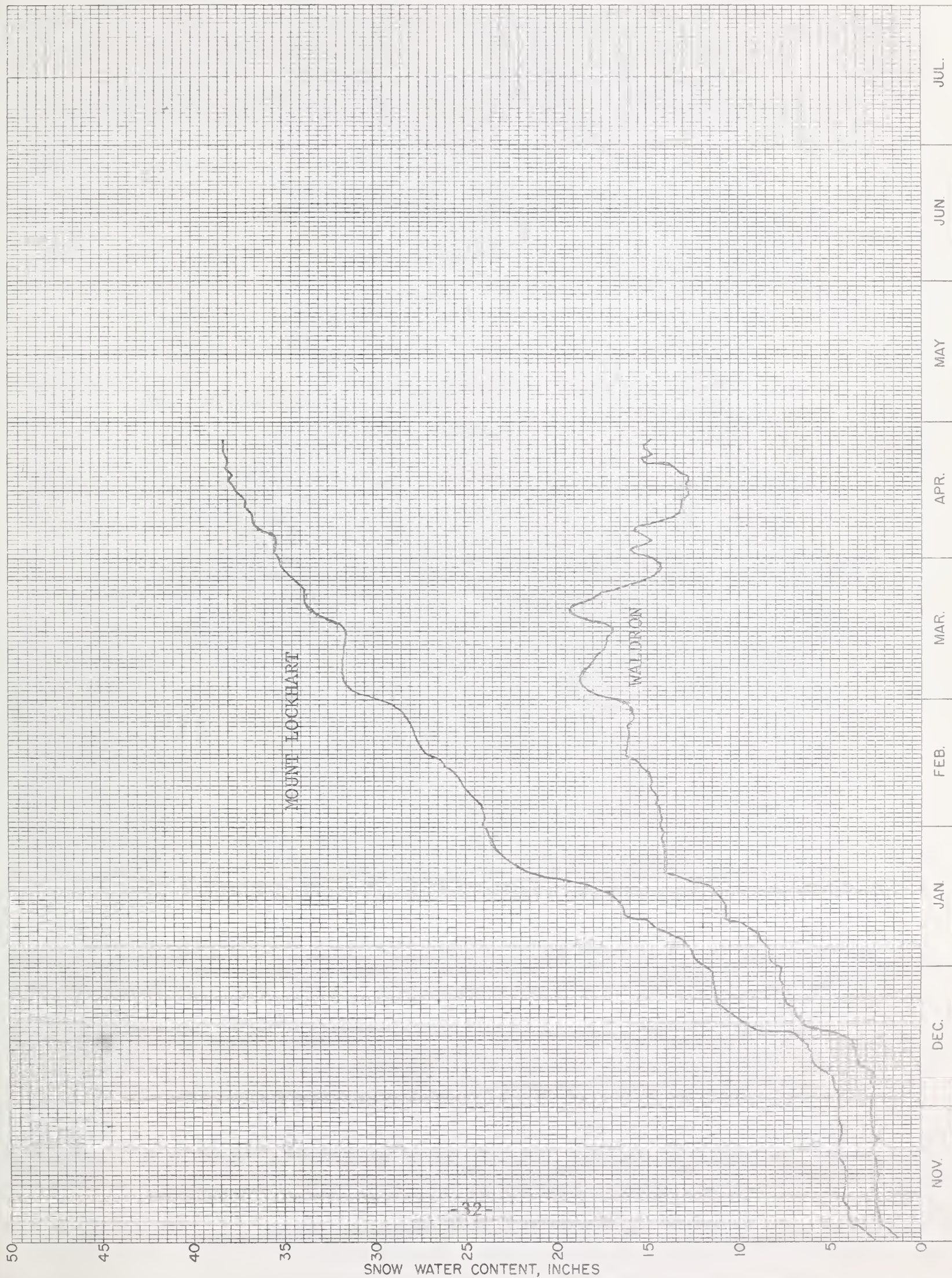
No. _____ Elev. _____ Drainage: JUDITH-JEFFERSON-MISSOURI



SNOW PILLOW DATA

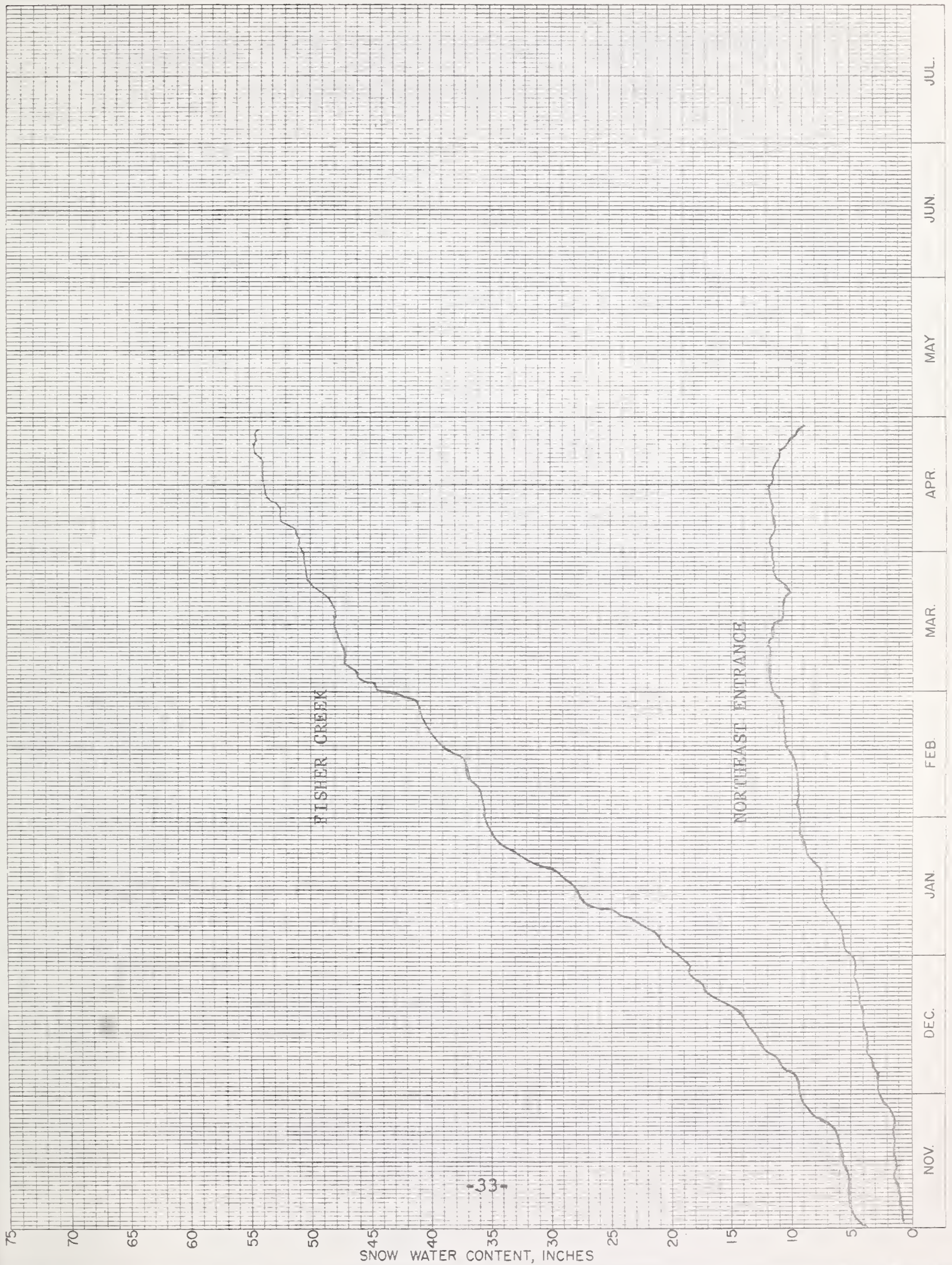
WATER YEAR 1972

No. _____ Elev. _____ Drainage: SUN



SNOW PILLOW DATA
WATER YEAR 1972

No. _____ Elev. _____ Drainage: YELLOWSTONE





Agencies and Organizations Cooperating in Montana Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Energy, Mines and Resources, Alberta
Water Investigations Branch, Department of Lands,
Forests, and Water Resources, British Columbia

Federal:

Department of the Army
Corps of Engineers
U.S. Department of Agriculture
Forest Service
Soil Conservation Service
U.S. Department of Commerce
NOAA, National Weather Service
U.S. Department of the Interior
Bonneville Power Administration
Bureau of Indian Affairs
Bureau of Reclamation
Bureau of Sports Fisheries and Wildlife
Geological Survey
National Park Service

STATE

Montana Conservation Districts
Montana Water Resources Board
Montana State University - Agricultural Experiment
Station
North Montana Branch Station - Agricultural Experiment
Station
University of Montana - School of Forestry

PRIVATE

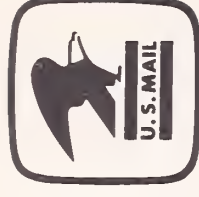
Montana Power Company

Other organizations and individuals furnish valuable
information for snow survey reports. Their cooperation
is gratefully acknowledged.

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SOIL CONSERVATION SERVICE

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FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

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necessary for forecasting
water supply for irrigation,
domestic and municipal water
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*"The Conservation of Water begins
with the Snow Survey"*



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PROCUREMENT SECTION
CURRENT SERIAL RECORDS

WATER SUPPLY OUTLOOK FOR MONTANA

Prepared by

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF
MAY. 15, 1972

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters of key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO NUMBER ORC 221-3

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR MONTANA

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

KENNETH E. GRANT

ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

|||||
Released by

A. B. LINFORD

STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
Bozeman, Montana

In Cooperation with

J. A. ASLESON

DIRECTOR
Montana Agricultural Experiment Station

|||||
Report prepared by

PHILLIP E. FARNES, Snow Survey Supervisor

and

BERNARD A. SHAFER, Assistant Snow Survey Supervisor

SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715

THE HISTORY OF THE

1700

1700

1700

1700

1700

1700

1700

1700

1700

1700

MONTANA WATER SUPPLY OUTLOOK
May 15, 1972

* * * * *

*
* There was very little snowmelt at higher elevations *
* the first half of May. Some melting was noted at *
* lower elevations, particularly about midmonth. *
* The heavy snowpack persists in the Columbia River *
* drainage and along the eastern slopes of the *
* Continental Divide. All snow measurements in this *
* area are above average. Some lower elevation *
* courses in the Gallatin drainage have below average *
* water equivalents, while higher elevation snow *
* courses are near average. *
*
* * * * *

COLUMBIA RIVER DRAINAGE

Snow Cover - All snow courses have above average water equivalents for this date. Many courses continue to have a record or near record snow cover. Very little melting was noted in early May. Lower elevation snow is beginning to show a good melt rate at mid-month. Major snowfed streams in the Flathead and Bitterroot drainages are expected to reach their peak snowmelt rate the first few days of June. The Blackfoot and Clark Fork rivers should reach their peak the latter part of May.

MISSOURI RIVER DRAINAGE

Snow Cover - The snowpack continues to be above average along the Continental Divide and at the higher elevations of the Little Belt Mountains. Snow cover is near average in the Gallatin drainage and near or above average in other portions of the Missouri drainage. Significant lower elevation melting occurred near midmonth with higher elevations beginning to show a slight snowmelt trend. Peak snowmelt is expected on the Jefferson and Madison rivers the latter part of May. The Gallatin river should reach the snowmelt peak in early June.

YELLOWSTONE RIVER DRAINAGE

Snow Cover - Nearly all snow courses indicate an above average snowpack near mid-May in headwater drainages of the Yellowstone tributaries. Lower elevations show a good melt rate near midmonth, while higher elevations indicate little or no melting to date. The Yellowstone headwaters, Boulder and Stillwater rivers are expected to reach their peak snowmelt the latter part of May or first of June. Rock Creek and the Yellowstone river below Livingston are expected to peak in early June.

THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

IN WHICH ARE CONTAINED THE
MOST IMPORTANT AND
INTERESTING PARTS OF HIS
REIGN, FROM THE BEGINNING
OF HIS REIGN, TO THE
END OF HIS REIGN, IN
THE YEAR 1649.

THE FIRST PART

THE FIRST PART OF THE HISTORY OF THE
REIGN OF KING CHARLES THE FIRST, IN
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BEGINNING OF HIS REIGN, TO THE
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THE SECOND PART

THE SECOND PART OF THE HISTORY OF THE
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END OF HIS REIGN, IN THE
YEAR 1649.

THE THIRD PART

THE THIRD PART OF THE HISTORY OF THE
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IMPORTANT AND INTERESTING
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BEGINNING OF HIS REIGN, TO THE
END OF HIS REIGN, IN THE
YEAR 1649.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

COLUMBIA RIVER BASIN

KOOTENAI RIVER

Bald Eagle Peak	5700	5/17	151	88.1	73.7	-
Banfield Mountain	5600	5/18	46	25.4	17.8	-
Banfield Mountain Pillow	5600	5/18	SP	22.2	14.4	-
Baree Creek	5500	5/15	107	61.2	39.8	43.4
Baree Midway	4600	5/15	70	37.6	25.4	26.8
Baree Trail	3800	5/15	0	0.0	0.0	0.0
Bristow Creek	3900	5/18	0	0.0	0.0	-
Cedar Grove	4100	5/17	0	0.0	6.3	-
Davis Creek	5400	5/16	36	20.1	23.3	-
Fernie	3500	5/10	0	0.0	0.0	0.4
Garver Creek	4250	5/16	0	0.0	0.0	-
Garver Creek Pillow	4250	5/16	SP	0.0	0.0	-
Glacier	4100	5/13	76	39.7	25.4	22.3
Graves Creek	4300	5/15	33	17.6	11.1	10.5
Gray Creek	5100	5/12	58	27.0	16.1	18.4
Hawkins Lake	6450	5/16	89	40.1	39.5	-
Hawkins Lake Pillow	6450	5/16	SP	44.9	39.4	-
Kicking Horse	5400	5/14	43	18.4	7.2	10.6
Lost Soul	4800	5/18	0	0.0	0.0	-
Marble Canyon	5000	5/12	43	19.4	8.4	8.3
New Fernie	4100	5/15	14	7.6	1.1	2.0
Poorman Creek	5100	5/17	66	38.1	30.1	-
Poorman Creek Pillow	5100	5/17	SP	39.9	26.8	-
Red Mountain	6000	5/15	46	23.9	15.6	18.2
Sinclair Pass	4500	5/12	8	3.6	0.0	1.0
Stahl Peak	6050	5/15	105	50.8	39.5	-
Sullivan Mine	5100	5/15	29	14.0	4.8	7.6
Weasel Divide	5450	5/15	89	48.6	33.3	33.2

SP - Snow pillow observation - water content only.



SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
					Last Year	Average

FLATHEAD RIVER

Bassoo Peak	5150	5/16	2	1.2	-	-
Beaver Lake	5900	5/17	56	32.0	-	-
Camp Misery	6400	5/16	137	69.1	-	-
Desert Mountain	5600	5/17	20	10.5	-	-
Griffin Creek Divide	5150	5/16	4	1.8	-	-
Gunsight Lake	6300	5/17	102	61.5	-	-
Hell Roaring Divide	5770	5/12	84	43.4	20.9	27.5
Holbrook	4530	5/17	0	0.0	-	-
Marias Pass	5250	5/15	41	22.7	-	-
North Fork Jocko	6330	5/16	114	63.1	47.6	46.2
Spotted Bear Mountain	7000	5/17	14	7.8	-	-
Trinkus Lake	6100	5/17	86	46.5	-	-
Twin Creeks	3580	5/17	0	0.0	-	-
Upper Holland Lake	6200	5/17	96	47.7	-	-

CLARK FORK RIVER

Black Pine Pillow	7100	5/17	SP	20.9	7.5	13.4
Copper Bottom	5200	5/17	0	0.0	-	-
Copper Camp	6950	5/17	92	51.2	-	-
Copper Creek	5700	5/17	14	8.4	-	-
Copper Lake Creek	6100	5/17	64	35.7	-	-
Cotter Mine	6250	5/17	36	21.3	-	-
Fred Burr Pass	8000	5/12	98	39.2	-	-
Heart Lake Trail	4800	5/16	50	26.2	14.0	-
Hoodoo Basin	6000	5/16	153	83.4	55.2	-
Hoodoo Basin Pillow	6000	5/16	SP	72.2	62.0	-
Hoodoo Creek	5900	5/16	145	79.2	52.7	42.5
Intergaard	6450	5/15	24	10.6	0.0	-
Lookout	5250	5/15	84	47.0	39.5	28.4
Red Lion	7100	5/12	70	28.3	-	-
Skalkaho Summit	7260	5/16	91	46.6	27.9	25.2
Stuart Mountain	7400	5/15	95	46.9	35.6	27.5
TV Mountain	6800	5/17	62	29.6	16.4	-

BITTERROOT RIVER

Gibbons Pass	7100	5/15	65	32.8	26.2	19.6
Lost Horse	5940	5/17	102	56.4	36.4	29.0
Saddle Mountain	7940	5/15	86	41.2	33.8	27.6
Saddle Mountain Pillow	7940	5/15	SP	39.4	38.1	-
Twelvemile Creek	5600	5/17	36	19.8	5.9	-
Twelvemile Creek Pillow	5600	5/17	SP	10.2	4.6	-
Twin Lakes	6510	5/17	128	68.6	48.7	44.0
Twin Lakes Pillow	6400	5/17	SP	69.0	46.9	-



SNOW		THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

MISSOURI RIVER BASIN

BEAVERHEAD RIVER

Bloody Dick	7600	5/17	27	12.2	-	-
Dad Creek Lake	8400	5/14	50	19.4	21.1	-
Gold Stone	8100	5/17	48	21.8	-	-
White Pine Ridge	8850	5/14	16	3.6	0.0	-

RUBY RIVER

Clover Meadow	8600	5/14	51	19.8	24.1	-
Divide	7900	5/14	21	8.0	10.3	-
Notch	8500	5/14	62	26.3	22.3	-

BIG HOLE RIVER

Abundance Lake	8800	5/14	74	33.6	28.2	-
Calvert Creek	6450	5/16	21	11.8	-	-
Darkhorse Lake	8600	5/14	91	43.4	35.3	-
Foolhen	8280	5/14	64	29.0	20.5	-
Jahnke Creek	7340	5/17	21	9.8	-	-
Jahnke Lake Trail	7200	5/17	24	11.6	-	-
Mudd Lake	7650	5/16	58	29.2	-	-
Palisade Creek	8250	5/16	100	47.2	-	-
Slag-A-Melt Lake	8750	5/14	86	40.7	-	-

JEFFERSON RIVER

Copper Mountain	7700	5/15	27	11.6	5.0	-
Rocker Peak	8000	5/15	49	22.2	17.8	-
Rocker Peak Pillow	8000	5/15	SP	23.7	19.9	-
Uncle Sam Gulch	6500	5/15	8	3.3	0.0	-

MADISON RIVER

Call Road	8050	5/14	40	14.8	12.6	-
West Yellowstone Pillow	6700	5/17	0	0.0	2.8	-
Whiskey Creek	6800	5/15	20	11.3	16.8	-
Whiskey Creek Pillow	6800	5/15	SP	12.2	-	-

SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

GALLATIN RIVER

Arch Falls	7350	5/16	30	11.8	15.4	13.4
Bridger Bowl	7250	5/15	66	32.8	41.5	27.6
Bridger Bowl Pillow	7250	5/15	SP	32.5	38.3	25.1
Devils Slide	8100	5/16	62	25.8	32.6	26.0
Hood Meadow	6600	5/16	9	3.8	7.4	7.3
Lick Creek	6860	5/16	0	0.0	1.9	7.3
Lick Creek Pillow	6860	5/16	SP	0.0	0.2	6.5
Maynard Creek	6210	5/15	36	18.0	19.7	13.4
Maynard Creek Pillow	6210	5/15	SP	11.0	12.7	-
Shower Falls	8100	5/16	70	29.8	35.8	28.5
Shower Falls Pillow	8100	5/16	SP	29.6	32.8	27.1

MISSOURI RIVER (Main Stem)

Deadman Creek	6450	5/15	8	4.2	0.0	7.1
Deadman Creek Pillow	6450	5/15	SP	3.4	0.1	-
Kings Hill	7500	5/15	50	23.2	16.1	14.5

SUN-TETON-MARIAS RIVERS

Badger Pass	6900	5/17	115	61.2	-	-
Blue Lake	5900	5/17	28	16.4	-	-
Five-Bull	5700	5/17	2	0.9	-	-
Freight Creek	6000	5/17	38	22.8	-	-
Mount Lockhart	6400	5/15	74	36.6	-	-
Mount Lockhart Pillow	6400	5/15	SP	38.5	26.7	-
Waldron	5600	5/15	6	2.6	-	-
Waldron Pillow	5600	5/15	SP	8.8	2.1	-

JUDITH RIVER

Spur Park	8100	5/15	73	36.2	27.0	24.0
Spur Park Pillow	8100	5/15	SP	34.4	25.0	-

UPPER YELLOWSTONE RIVER

Camp Senia	7890	5/15	25	9.2	10.3	8.4
Cooke Station	8150	5/17	50	24.4	26.0	17.8
Fisher Creek	9100	5/17	110	53.6	58.0	36.0
Fisher Creek Pillow	9100	5/17	SP	46.4	55.2	-
Grizzly Peak	8400	5/16	71	26.9	-	-
Northeast Entrance	7400	5/17	4	2.0	4.0	4.2
Northeast Entrance Pillow	7350	5/17	SP	0.0	3.0	-
Timberline Creek	8850	5/15	57	19.7	23.0	17.8
White Mill	8700	5/17	84	39.8	42.6	26.1



Agencies and Organizations Cooperating in Montana Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Energy, Mines and Resources, Alberta
Water Investigations Branch, Department of Lands,
Forests, and Water Resources, British Columbia

Federal:

Department of the Army
Corps of Engineers
U.S. Department of Agriculture
Forest Service
Soil Conservation Service
U.S. Department of Commerce
NOAA, National Weather Service
U.S. Department of the Interior
Bonneville Power Administration
Bureau of Indian Affairs
Bureau of Reclamation
Bureau of Sports Fisheries and Wildlife
Geological Survey
National Park Service

STATE

Montana Conservation Districts
Montana Water Resources Board
Montana State University - Agricultural Experiment
Station
North Montana Branch Station - Agricultural Experiment
Station
University of Montana - School of Forestry

PRIVATE

Montana Power Company

Other organizations and individuals furnish valuable
information for snow survey reports. Their cooperation
is gratefully acknowledged.

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with the Snow Survey"*